University of Alberta

Language and Academic Skills of Elementary School Children Adopted from China as Infants

by

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ABSTRACT

In Canada and United States over 70,000 international adoptions originated from China since the early 1990s. To determine if there is any basis for concern that the unique 'second first language acquisition' and history of institutionalization leave these children at risk for learning problems as academic language requirements increase with grade levels, information was collected from parents of 73 children, Kindergarten to Grade 6, with teacher report and student written story when possible. Comparisons to norms set for native born peers showed that as a group, the children adopted from China did not differ significantly, nor were significant differences observed between children in lower (K-2) and older grades (3-6). No predictors consistently accounted for performance, although age at adoption and time in foster care were significantly related to some measures. Although a wide distribution of scores included many children exceeding expectations for their grade level, a slightly higher than expected percentage of children performing below average indicates that some children need appropriate intervention and support.

Key words: international adoption, China, school performance, language development, second first language

Dedication

This thesis is dedicated to all parents but especially those who began their parenting journey with travel to China to meet the child(ren) who enrich and shape their lives, and also to the children from China who do what children do best, grow and develop.

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This thesis was only possible because of the love and support - and some timely computer tips - from my family and friends. When work got overwhelming, family and friends provided connection to other aspects of life while maintaining distance from the problems related to time spent at the computer. For their gifts of laughter, compassion, and love, I am grateful. Most of all, they understood that my time and focus was very limited while I was working on this project. As well, my wonderful daughter Lisa Rollheiser deserves a very special thank you for the enigmatic drawing for my story writing script.

The generous gift of shared experience from the families of children adopted from China, their teachers, and the students themselves is something I truly appreciate. I never expected to get such a sense of parental pride, and even concern, but especially love, over the distance. As a parent, I could identify with their desire to provide their children with the best possible childhood and future.

My thesis grew slowly but steadily with the calm guidance of my thesis advisor, Dr. Karen Pollock, who patiently supported me while the thesis topic became 'my own', was there to talk me through the issues that arose, and provided suggestions for contacts who could be helpful. Many people contributed to the knowledge that I needed to complete the process. Jenn Curry, a PhD student from the Department of Educational Psychology, took the time to give me great suggestions for developing a survey. Each one of the committee members brought their own expertise. Dr. Phyllis Schneider' statistics information and experience with narrative filled some gaps in my understanding. Dr. Joanne Volden had timely suggestions, always with an emphasis on clarity and I especially appreciated her generosity in providing standardized forms when my order was delayed. Dr. Linda Laidlaw couldn't be there for the final defense but contributed to the proposal, and Dr. Joyce Bainbridge graciously joined the committee for the defense. Their interest was encouraging and their insights and questions added greatly to the thesis.

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LIST OF ABBREVIATIONS

ACES	Academic Competence Evaluation Scales
AE	Academic Enabler (ACES subscore)
AS	Academic Skills (ACES subscore)
ASD	Autism Spectrum Disorder
CAC	Children Adopted from China
CCC-2	Children's Communication Checklist second edition
EE	Exceeds expectations (for writing standard)
FM	Fully meets expectations (for writing standard)
GCC	General Communication Composite
IA	International Adoption
IAs	International Adoptions
MM	Minimally meets expectations (for writing standard)
NYM	Not yet meeting expectations (for writing standard)
R/LA	Reading and Language Arts
SFL	Second "First Language"
SFLA	Second "First Language" Acquisition
SIDC	Social Interaction Deviance Composite
SLI	Specific Language Impairment
WS	Writing Score

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CHAPTER 1: INTRODUCTION AND LITERATURE REVIEW

International adoption (IA) has been an increasingly common choice for thousands of parents in North America with adoptions originating from China predominating. In both Canada and the United States the number of IAs originating from China by far surpasses the number from any other country. Over 61,000 children in the US and over 9000 in Canada have been adopted from mainland China since 1992 (Adoption Council of Canada, 2006; Family Helper, 2006; US Department of State, 2006). These 70,000 children have left behind the language that surrounded them since conception to abruptly become immersed in the language of their adopted family, a language experience that has become known as "second first language acquisition" (SFLA) (Glennen & Masters, 2002; Roberts, Krakow, & Pollock, 2003), to differentiate it from other types of bilingual or second language learning. Despite the number of children adopted from China (CAC) in North America, little is known about the long term effects of SFLA, the resulting language ability of CAC in the school setting, or how this unique language learning experience affects school achievement.

Based on available statistics, it is estimated that over 29,000 of the children in North America who were adopted from China as infants are likely to be school aged (i.e. 5 years or older) in 2006. Because language difficulties can affect a wide range of communications skills important for success at school (Paul, 2001) there are concerns that the unique language issues faced by CAC will affect school achievement (Gindis, 2004a; Miller& Hendrie, 2000; van IJenzendoorn, Juffer, & Poelhuis, 2005). Although the majority of CAC appear to have caught up or even surpassed their English-born peers in the preschool years, further research is needed to determine language outcomes of school-aged CAC (Roberts et al., 2003). This study examined the school achievements of children who were adopted from China as infants and are now enrolled in school from Kindergarten to Grade 6 to determine how they perform in a school setting compared to norms established by non-adopted peers.

Literature Review

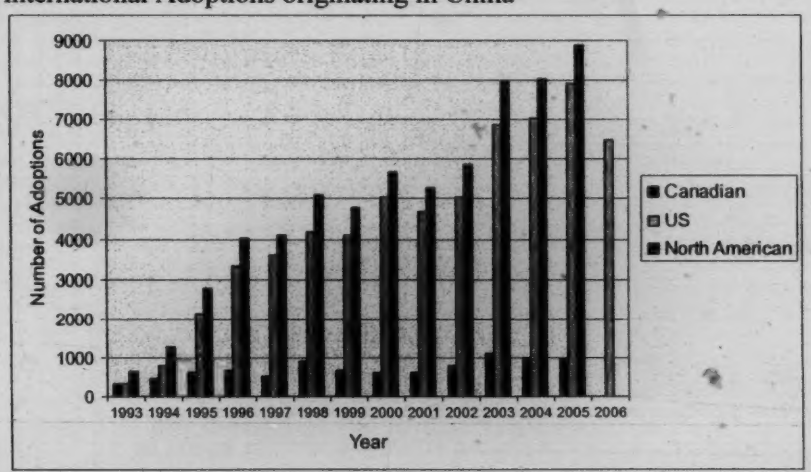
Statistics on Adoption from China

The number of US adoptions from China has risen from 330 children in 1993 to about 6,500 in 2006, a dramatic increase from 5% to over 31% of the total number of international adoptions (IAs) in the US. Since 1996 CAC have accounted for 24% to 35% of International Adoptions, upholding mainland China as the most frequent country of origin from 2000 to the present time (US Department of State, 2006).

In Canada for the past 10 years the international adoptions originating from China ranged from 30% to 50% of total IA with almost 3 times as many adoptions originating in China compared to the next most frequent country of origin for IA (Adoption Council of Canada, 2006; Family Helper, 2006). Numbers have grown steadily in Canada from 320 CAC in 1993 to over 1000 adoptions per year for 2003 and 2004 and just under 1000 (973) for 2005 (Adoption Council of Canada, 2006). This striking increase is visible in Figure 1 which shows the number of Canadian and American adoptions from China over the past 14 years.

Although 2005 statistics show adoptions from China declined 3% in both US and Canada, reflecting a slight overall drop in IA in both countries, mainland China is still by far the most popular country. Fifty-two percent of Canadian IA and 35% of American IA originated in China (Adoption Council of Canada, 2006; US Department of State, 2006).

Figure 1. International Adoptions originating in China



Note: Statistics for Canadian adoption for 2006 were not yet available at the time of research. (Source for statistics: Adoption Council of Canada, 2006; US Department of State, 2006)

Adopted children generally range in age from 8 months to 3 years at time of placement (Hawaiian International Child, n.d.) with around 35% under the age of 1 year when adopted (Adoptive Families, 2006). Because most schools in Canada and the US require children to be at least 5 years old before December 31 of a school year in order to enroll in kindergarten, infants adopted before 2001, over 50,000 CAC, are likely enrolled in school in the 2005-2006 school year. With this growing number of CAC within the school systems, it is important that parents and teachers understand potential risks for school performance that are associated with IA and more specifically, how CAC may be affected. Since it is believed that prevention of literacy problems is easier than remediation (Catts, Fey, Zhang, & Tomblin, 2001), this is an optimal time to examine school achievement for CAC to understand what to expect and whether or not early intervention is needed to reduce the impact of risk factors.

Possible Challenges Resulting from International Adoption

Physical and Emotional Well Being. In China, typically only healthy children or children with minor or surgically correctable special needs are eligible for adoption. These special needs can include cleft lip and/or palate, heart murmur, bowed legs, missing or extra fingers and toes, birthmarks, and minor hearing or vision deficits (Hendrie, 1995; Arsonson, 2003; Family Helper, 2006). Nonetheless, assessments done shortly after the arrival of CAC in the USA have frequently found growth and developmental delays, even in children classified as "healthy" at the time of adoption. Similar to most groups of IA children, CAC encounter conditions prior to adoption that affect their health and physical well being. Low birth weight, time spent in an orphanage, less than ideal nutrition, medical conditions that are likely to have gone untreated due to insufficient health services, and elevated stress levels contributed to by maternal separation, psychological deprivation, neglect, and malnutrition in orphanages or poor families before adoptive placement are common (Arsonson, 2003; Juffer & van IJzendoorn, 2005; Mason & Narrad, 2005; Miller & Hendrie, 2000; Narad & Mason, 2004). Common medical conditions include anemia, abnormal thyroid function, hepatitis B antibodies, chronic ear infections, orthopedic problems, intestinal parasites and congenital anomalies. Although elevated lead levels were more common in CAC than in

other groups of IA children, conditions such as Fetal Alcohol Syndrome and drug exposures, are non-existent (Arsonson, 2003; Miller & Hendrie, 2000) and human immuno-deficiency virus (HIV) infections are extremely rare (Arsonson, 2003). Most medical concerns for CAC are treated soon after adoption with no residual effects.

Little information about any aspect of a child's health and development is available at the time of adoption and not all CAC are screened at the time of adoption. Most significant delays are likely directly related to prenatal and early postnatal environmental experiences (Mason & Narad, 2005). Miller and Hendrie (2000), by screening over 450 CAC between 1991 and 1998, found that 75% had a significant developmental delay in at least one area, including gross motor, fine motor, cognitive, language, social-emotional or global delays. Reports of emotional well being and social competence of IA children are inconclusive and sometimes contradictory (Rojewski, Shapiro, & Shapiro, 2000). For those children not screened at adoption, intervention is dependent on parental concern. Fortunately, most adoptive parents are well-informed and know when to make use of professional resources. Most children prove to be quick to adjust to SFLA and make rapid gains with their parents' support (Narad and Mason, 2004; Rutter et al. in Judge, 2003; van IJzendoorn et al., 2005).

Early Language Development. Heredity and experience together are responsible for language development from the earliest sounds that reach a baby in utero. Children are described as "listeners in a social world of people talking to and around them" (Hart and Risley, 1999, p. 73), exposed to an average of 3 million words (for welfare families) to 11 million words (for professional families) in the first year of life (Hart & Risley, 1999). Exposure to ambient language within the first year has a direct effect on perception of speech sounds, narrowing a child's ability to discriminate phonemic contrasts from all the contrasts in all languages to the contrasts specific to their native language (Werker & Tees, 1984). This results in changes in the way a baby responds to the language heard (Gopnik, Meltzoff, & Kuhl, 2002).

Because language is an integrated part of cognitive, social, and emotional development, speech and language most consistently show the effects of stimulation and activity in a baby's first years of life (Damico & Simon, 1993; Thal & Clancy, 2001; Gopnik et al., 2002). Babies who had the highest amount of language experience had

higher IQ scores and accrued language experience that is "added into cumulative experience forever" (Hart and Risley, 1999, p. 182), one reason why literacy development is said to begin at birth (National Association for the Education of Young Children, 1998).

Whether or not there are critical periods for learning language continues to be questioned (Gopnik et al., 2002). Cummins (2003) credits the frequent repetition of words and sounds with embedding the properties of grammatical structure and lexical patterns of cognitive language that will be important to a child's higher level language use. CAC miss out on this early exposure. Not only is the Sino-Tibetan sound system that surrounds a Chinese baby from before birth to the time of adoption very different from English but most CAC go through an abrupt transition when they arrive in their new surroundings where English, an Indo-European language, is predominantly spoken. Although the overall effect of timing of SFLA on language and academic skills is still unknown, infants seem to catch up to their peers more easily than toddlers (Krakow, Tao & Roberts, 2005).

At the time of adoption, there is usually very little information on the quality and quantity of a child's individual language exposure (Edelsward, 2005; Miller & Hendrie, 2000). Early English language delays are normal for children as they go through SFL acquisition (Arsonson, 2003; Glennen, 2005; Glennen & Masters, 2002; Gindis, 2004b Nicoladis & Grabois, 2002; Pollock, 2005; Roberts et al., 2005; Roberts, Pollock, Krakow, Price, Fulmer & Wang, 2005). Despite these initial delays as the child adjusts to learning English, children adopted as infants follow the same overall pattern of language acquisition as monolingual English-speaking children (Geren, Snedecker, & Ax, 2005; Krakow et al., 2005). Unlike children who experience a bilingual acquisition of a second language, CAC lose their first language (L1) as English is acquired, with the consequent loss of the conceptual and linguistic advantages of continued use of L1 (Cummins, 2003) although it may enable them to complete the process of learning English more quickly than they would as bilingual learners in non-English speaking homes (Dole, 2005).

Recent research shows that CAC, like many children who have experienced IA, are resilient. Geren et al., (2005), using information from parental reports and speech samples, concluded that rapid vocabulary gains as well as increased understanding and

use of sentence structure suggest that many IA preschoolers eventually catch up with their native-born peers in as short a time as around 12 months (Krakow et al., 2005) to 16 months (Tan & Yang, 2005), and usually before 24 months with their adopted family (Pollock & Price, 2005). Roberts et al. (2005) found that the majority (95%) of the 55 preschool CAC studied "scored within or well above the average range on two or more measures" of English speech and language development. Even with these optimistic results, the delay in acquiring English and loss of L1 combined with institutional or poor care theoretically creates a high risk for speech and language disorders that are very likely to become evident in school years (Gindis, 2004b, Glennen, 2002; Gunnar, Bruce & Grotevant, 2000; McGinness & Dyer, 2006).

Readiness for Successful Performance at School

A range of factors affects performance at school when a child enters kindergarten and in turn, a child's early school achievement goes on to affect later school experiences and literacy levels. Cognitive and behavioural development in early childhood is predictive of elementary school achievement (Baydar, Brooks-Gunn, & Furstenberg, 1993; Echols, West, Stanovich, & Zehr, 1996) and evident in five factors important to a good start at school. These are:

> -health and physical well being
> -emotional well being and social competence
> -approaches to learning including curiosity, motivation, learning styles
> -language development including verbal language and emergent literacy
> -cognition and general knowledge
>
> (National Education Goals Panel, 1997)

Singly or in combination, these five factors are likely to affect school experiences of adopted children. The area of greatest interest for this study is the language development including oral language and emergent literacy. Health and physical well being, emotional well being and social competence are considered with respect to their effect on language development especially because these areas are most likely affected by preadoption care and the unique SFL learning experience (Glennen & Masters, 2002; Roberts et al., 2005).

Readiness Concerns for School age Children Adopted from China

Health and physical well being. Meese (2002) states that unknown special needs may become evident as IA children, no matter what the country of origin, enter school, although the impact of risk factors like inadequate nutrition and institutionalization can be reduced if parents and teachers understand the risks. For many children of IA, long term outcomes of early health concerns are still unknown (Miller & Hendrie, 2000), but by the time CAC reach school age, the medical conditions diagnosed upon arrival have been treated (Hendrie, 1995). Major continuing health concerns are not expected for CAC.

Emotional well being and social competence. Behaviour problems may not only place children at risk for increased difficulty at school but make it more difficult for children to benefit from help to catch up with their peers (Spira, Bracken, & Fischel, 2005). Although the majority of children who have experienced IA are well adjusted, a higher percentage of IA children compared with non-adopted controls is referred to mental health services (Juffer & van IJzendoorn, 2005). Glennen and Bright (2005) found that length of institutionalization of children adopted from Eastern Europe correlated with prevalence of Attention Deficit Disorder (ADD) and Attention Deficit Hyperactivity Disorder (ADHD).

In contrast with children adopted from Eastern Europe, the overall behaviour of CAC is generally positive based on parental assessment of 6 to 9 year old children, although highly variable scores of individual participants show a greater potential for at-risk behaviour (Rojewski & Rojewski, 2000). Certainly, there are many issues related to adoption that families will need to be prepared to deal with as CAC mature and there is the potential of these issues affecting school performance.

Language Development. By the time they enter kindergarten, most CAC, like other children who experience IA, are monolingual, within the normal range of language development, and seem to be caught up with their English speaking peers with conversational proficiency and basic interpersonal communicative skills (Glennen, 2002; Glennen & Masters, 2005; Roberts, Pollock et al., 2005). Despite these encouraging results, there are continued concerns that 'language for learning' or the complex language

and communication skills used increasingly in higher grades (Paul, 2001) will pose a challenge (Gindis, 2004b; Glennen & Bright, 2005; Meese, 2002) and careful monitoring is recommended (Gindis, 2004a; Munsinger, 1975 - as cited in van IJzendoorn et al., 2005; Roberts et al., 2005). Based on his clinical experience working with IA children, Boris Gindis cautions that problems may emerge as early as first grade (Gindis, 2004b).

A number of clinicians and researchers are expecting increasing numbers of learning problems for children of IA as they progress through school. In a meta-analytic comparison of the IQ and School Performance of adopted children in a small number of studies from Norway, Netherlands, United States, and Sweden published between 1982 and 2000, van IJzendoorn et al. (2005) found that though the IQ scores of IA children are comparable to their non-adopted peers, IA children adopted from Korea, Columbia, and Thailand lag behind in school performance and language abilities compared to their classmates. They concluded that despite their "remarkable recovery from often extremely adverse preadoption circumstances" that confirms their resilience, academically children adopted from other countries do not catch up completely with their native born peers and higher percentages require special services to deal with learning problems (van IJzendoorn et al., 2005). Results of studies of IA children in Norway were mixed. For example, Dalen, in Rygvold (1999) observed that children adopted from Korea performed better at school and had better language skills than their Norwegian-born counterparts but those from Columbia scored far worse on the same variables. There was no statistically significant correlation between day-to-day language skills and school results (Rygvold, 1999).

Analysis of school experiences of North American children adopted from Eastern Europe found that despite having caught up to peers before entering school, IA students had lower mean scores on scales of language performance although they were within the normal range (Glennen & Bright, 2005). Many seemed to have more problems with use of higher-level pragmatic language and there was a higher than normal rate of hyperactive behaviours in the classroom (Glennen & Bright, 2005).

Generalization of results of IA across different countries of origin is not possible because of distinctive characteristics of the language of the birth countries and preadoption experiences. As a group, CAC experience advantages not found in children

adopted from other countries. Because of their relatively young ages at adoption, they are more likely to have had short institutional stays and an increasing number have received foster home care. Compared to children adopted from Eastern Europe, they are less likely to have physical, emotional, and behavioural health needs that are likely to affect their success at school (Groza, Ryan, & Cash, 2003). In addition, babies adopted from China are predominantly female (95%) because of China's one child policy and a cultural preference for boys (Adoptive Families, 2005). Many but not all researchers consider this to be an advantage because risk factors of birth, prenatal background, deprivation, malnutrition and neglect are thought to have a greater impact on boys (Mason & Narrad, 2005). Preschool language scores within or well above the average range (Roberts et al., 2005) are also favorable indicators for CAC as infants. Conversational proficiency alone is not a reliable predictor of school achievement; however, well developed oral language skills provide an advantage in acquisition of early literacy skills of vocabulary, grammar, verbal memory, and reading comprehension (Gopnik et al., 2002; Hart & Risley, 1999; Rescorla, 2005; Speece, Roth, Cooper & de la Paz, 1999).

Other Possible Influences. Despite van IJzendoorn's conclusion that the "adoptive parents' home environment has only a modest effect on their adopted children's cognitive development compared to heredity and environment of the birth parents" (van IJzendoorn et al., 2005), it is likely that the stimulation and security of the new environment for CAC facilitates optimal development (La Paro, Justice, Skibbe, & Pianta, 2004). Parents of adopted children, and especially CAC, are somewhat older and more highly educated than average (Judge, 2003; Juffer & van IJzendoorn, 2005; Roberts, Krakow et al., 2005) and their socioeconomic status (SES) is generally well above average (Judge, 2003; Maughan, Collishaw, & Pickles, 1998). SES is strongly linked to cognitive and behavioural development in childhood (Baydar et al., 1993; Hart & Risley, 1999), not because of financial ability to provide stimulating materials for children but because parents in higher SES levels talk to their children more than parents at lower SES levels. Babies who hear more speech and have more language interaction accumulate a wide variety of experiences and build on exposure to speech and language that increases their own ability to use language (Hart & Risley, 1995 and 1999). Parents of CAC, particularly mothers, tend to be well educated and provide access to literacy materials and

experiences (Dolloghan, Campbell, Paradise, Feldman, Janosky, Pitcarin, & Kurs-Lasky, 1999; Rojewski & Rojewski, 2001) that stimulate a child's development, including story times, computer access, physical activity and nutritious foods (Fransoo, Wilson, Brownell, & Roos, 2005). The family's positive attitude and motivation to read also has a positive effect (Brooks, 2000; Kamhi & Catts, 2005). Enriched surroundings and committed parents have a positive effect on language ability (Judge, 2003; McGinness & Dyer, 2006).

Summary

Overall, CAC appear to be well-adjusted (Rojewski & Rojewski, 2000) and doing at least as well or better than their non-adopted peers in terms of language development after 16 to 24 months of exposure to English (Tan & Yang, 2005; Roberts, Krakow et al., 2005; Roberts, Pollock, & Krakow, 2005). However, because there is no information regarding their long term language development, behaviour, and school achievement of this unique group, parents or professionals who work with CAC have no information to support choices or decisions for home or school practices.

Purpose and Research Questions

The primary purpose of this study is to obtain information on language and academic skills of school aged children who were adopted from China as infants (i.e., prior to 2 years of age). Specific research questions to be addressed include:

1. How do children adopted from China as infants perform on measures of language and academic skills compared to norms available for their grade level?
2. Are there any differences in performance between children in upper and lower elementary grade levels?
3. What factors, if any, are correlated with measures of language and academic performance?

CHAPTER 2: METHOD

Participants

Age and Grade Level

All of the 73 CAC taking part in this survey were female ranging in age from 5 years 6 months to 12 years 6 months of age. They were just finishing their grade although information on one child was completed after two months of a new grade. Because the materials completed later were not relevant to maturity, this participant was considered at the lower grade level. Primarily children were attending public schools, although some children went to private schools including Montessori schools, or were homeschooled. Parents and teachers reported that six children were in gifted programs although there may have been more because that was not a specific question in the surveys. In addition, teachers described classes for 2 children as 'rigorous academic environments'. One child was reported to be on an Individual Education Program to get assistance with comprehension. None were reported to be in special education programs. Each grade from Kindergarten up to Grade 6 is represented. Table 1 shows the distribution of participants by grade.

Table 1
Number of participants by Grade level

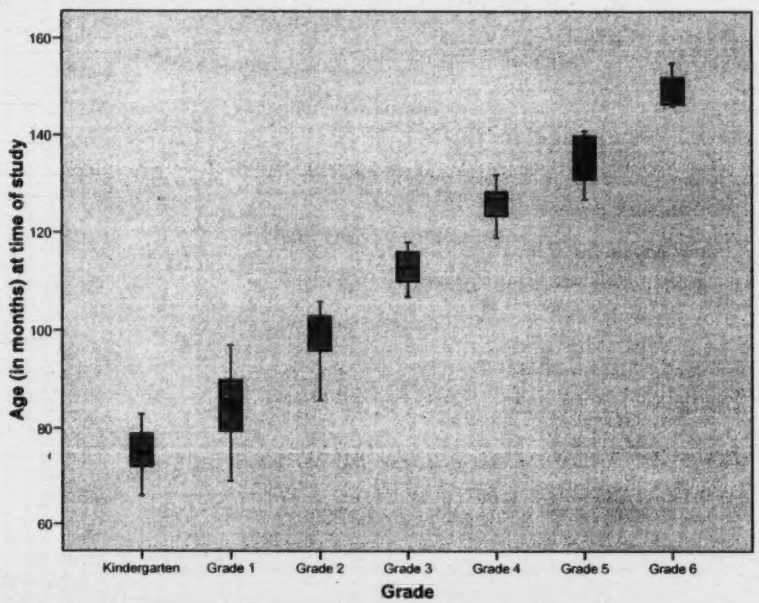
Grade	Number of participants
Kindergarten	17
Grade 1	11
Grade 2	10
Grade 3	8
Grade 4	15
Grade 5	8
Grade 6	4
Total	73

The greatest response came from families with Kindergarten children, 17 in all. This is not surprising considering the statistics for adoption from China show increased adoptions from 1995 when children now in higher grades would have been adopted, to early 2000s when the younger children were adopted. An almost equivalent number of participants from Grade 4 was not expected but very welcome because Grade 4 is often considered to be at a level where learning shifts to a higher cognitive level, from "learning to read", when students' attention is on decoding the print and support is required to establish meaning, to "reading to learn", when skilled word identification and comprehension are necessary for increasingly complex text (Chall, 1996; Paul, 2001).

Across all grades, several parents reported early enrollment, a late Kindergarten cut off in the school area, advancement of a grade, or repeating a grade but most grades have a range of approximately one and a half years. No unusual conditions explain the noticeably greater range of ages from 5 ¾ to 8 years for Grade 1. Participants' ages by grade level are shown in Figure 2. The full range of ages for each grade is represented by a stem with 50% of the grade within the box and a dark line representing the median.

Figure 2

Age range (in months) for grade level at the time of the survey



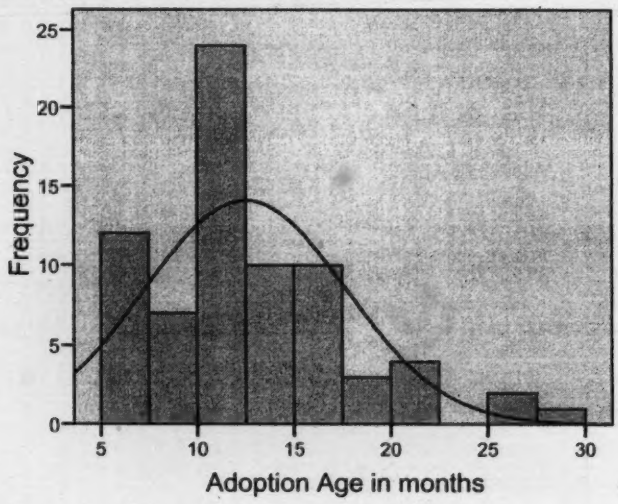
The box for each grade represents the interquartile range of the students in the grade with a dark horizontal line for the median. Whiskers extend to the highest and lowest ages for the grade.

Age at time of adoption

Most participants had been adopted between the age of 3 and 28 months, at an average of just over 12 months, with almost 60% of babies being 12 months old or less at the time of adoption. Figure 3 shows the distribution of adoption ages for participants in this study. The mean age at adoption for the two subgroups (lower and upper grades) differed by approximately one month (see Table 2). However, an independent samples t-test showed that this difference (which is likely due to increased wait times for processing as numbers increased) was not significant ($t(71) = .94$, $p = .35$).

Figure 3

Age (in months) at time of adoption



N=73; Mean = 12.51 (5.18)

Table 2

Adoption Age comparison between lower and upper grades

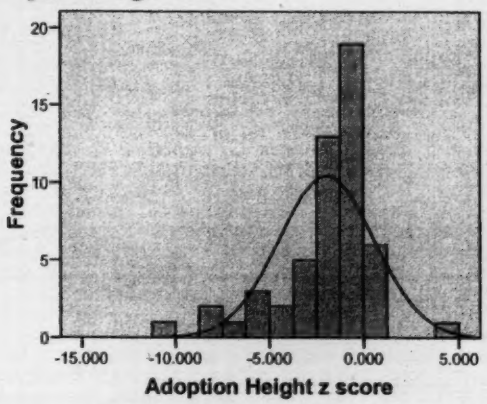
	Number	**Mean adoption age (SD) in months**
Kindergarten to Grade 2	38	13.05 (5.09)
Grade 3 to Grade 6	35	11.91 (5.28)
Total group	73	12.51 (5.18)

Adoption Height and weight z scores

Height and weight measurements from the first physician visit post-adoption as reported by parents serve as a general indicator of physical development at time of adoption. Height measurements were available for 53 children, and weight measurements for 68 children. These measurements were converted to z-scores using an online Standard Height and Weight Calculator (2002). The distribution of z-scores for adoption height and weight is shown in Figure 4. The mean height z-score was nearly -2, and the mean weight z-score nearly -3, as compared to the typical normative mean z-score of 0. Nearly 87% of babies were below average height and 97.1% were below average weight for their age. This possibly reflects racial characteristics (Duerenberg, Deurenberg-Yap, Foo, Schmidt & Wang 2003; Lahti-Koski & Gill, 2004; Meridith, 1968) as well as conditions for their care. Typically, 1 month of growth is lost for every 2.86 months in an orphanage (Miller & Hendrie, 2000).

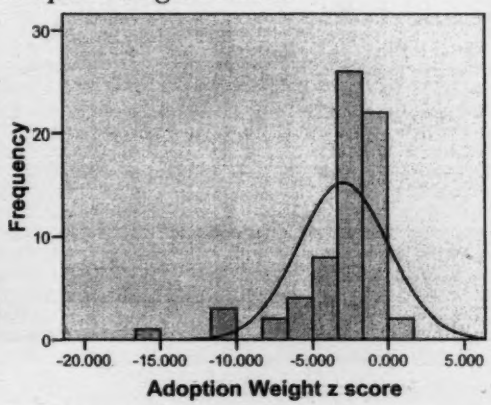
Figure 4

Adoption height z scores



N=53
Mean = -1.96
SD = 2.54

Adoption weight z scores



N = 68
Mean = -2.956
SD = 2.97

Developmental Concerns and Intervention

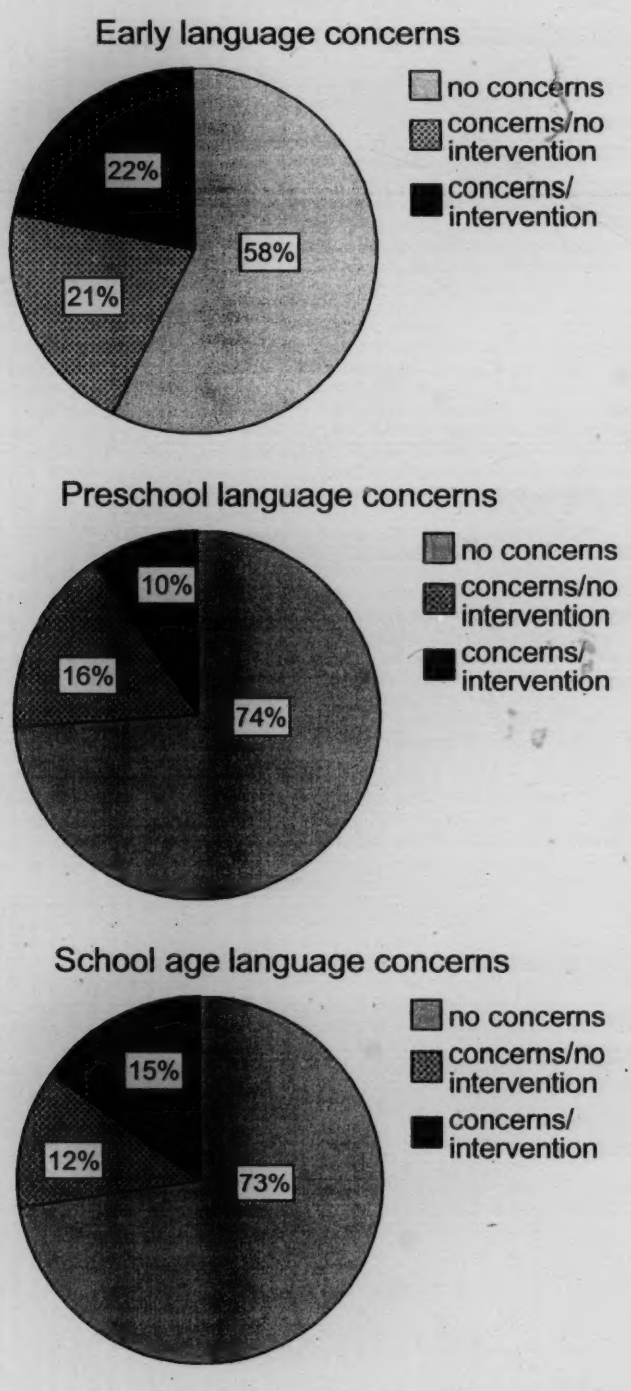
The parent questionnaire asked parents to report whether or not they had concerns about their child's development and whether or not the child had been assessed or received services for these concerns. Approximately 31% of parents reported that their child received screening at the time of adoption or shortly after, although one third of

these did not follow up with intervention, preferring to "wait and see". Another 10% sought intervention without screening. Overall, about half reported their baby was healthy at the time of adoption. Parents of 36 children, about 49%, reported medical concerns including 36% with one medical concern, about 12% with two concerns, and just over 1% with three or more concerns. Most medical concerns were short term issues that cleared up with treatment including parasites, asthma, various allergies and skin conditions, thyroid problems, anemia, febrile seizures, heart problems, rickets, low iron, elevated lead, and problems with teeth. At the time of the survey, most conditions had been treated and only 11 children (15 %) had any remaining medical problems, primarily allergies, eczema, or a need for continued thyroid medication. Most CAC had normal hearing with fewer than two hearing infections. Only three children had any hearing loss, two with short term hearing loss and one with a mild bilateral conductive loss. Overall, none of the medical conditions were expected to affect language and learning.

Language Concerns

The parent questionnaire asked whether there were concerns about the child's language development at three stages, shortly after adoption, at the preschool age, and at school age. Responses showed that the number of parents with no concerns increased and the number of parents with concerns who did not seek intervention decreased as children got older (see Figure 5). Parents with concerns shortly after adoption reported a variety of interventions: children may have seen a Physical Therapist, an Occupational Therapist, an Adoption Therapist, a Speech-Language Pathologist or other professional for early interventions for speech, muscle development, sensory integration, delayed development or any combination. By preschool, just over 26% of parents had concerns with about 10% of children receiving any therapy. When the children entered school, again slightly more than 27% had concerns but now 15% were receiving treatment. In the early grades concerns included "learning to read", "word retrieval", and "slight stuttering". At upper grade levels parents reported that "reading to learn" and "reading comprehension" became concerns.

Figure 5
Comparison of language concerns



Family Profiles

Family composition was varied and included two parent (63%) and single parent (37%) families. In 46.6% of families, the CAC was the only child. Almost 51% of the children had one sibling and 2.7 % had two or more. As expected from the demographics of previous surveys (Judge, 2003; Juffer & IJzendoorn, 2005; Roberts, Krakow, et al., 2005) most parents were in 40+ year age groups and 93% of all parents had at least some college education. A high number of parents, 88%, had a graduate or professional degree.

English was the predominant language with 8 children reported to be in bilingual or immersion school programs including French (2), Chinese (5), or Spanish (1). Parents reported that another 21 of the children, 28%, participated weekly in 1 to 2 hours of Chinese language instruction outside of school. In addition to language connections to their child's heritage, parents report providing Chinese daycare, play dates with other CAC, Chinese dance, and martial arts.

Data Collection

Participant Recruitment

Because the number of potential participants in the local area is limited, a survey methodology was selected to obtain a reasonable sample size. Participants initially learned about this research project through online requests that were sent out to email support groups for parents with children adopted from China. Interested parents with school age children from Kindergarten to Grade 6 in a predominantly English setting were able to check a webpage that had more detailed information including contact information to request more information or get a research package. The notice requesting participants was initially sent out electronically, but families could also learn about the research through word of mouth within adoption groups and then contact the researcher by telephone or by mail. At least three families heard about the study through word of mouth before contacting the researcher. Every attempt was made to reach as many families as possible.

Survey Material Distribution

Over 150 families across Canada, the United States, and Great Britain originally made contact with the researcher by email. Some were ineligible because of the age of their child (usually not yet in Kindergarten) and others chose not to participate. As families requested them, packages were mailed out with return postage until the end of July. Families were sent notification by email when the package was mailed and a follow-up message was sent three to four weeks later and if necessary, seven to eight weeks later. A replacement package was sent to several families when the follow-up revealed that packages mailed earlier had not arrived. At least one completed package also did not arrive but the family was not asked to complete all of the requirements again. Seventy-five of the 135 mailed packages were completed and returned, representing 70 families (five families each completed packages for two children) from 22 states, 5 provinces, and 3 locations outside North America.

Survey Package contents

Survey packages were mailed to interested participants, and included:

- a letter to the Parent(s) (Appendix A) explaining the purpose of the Study and the procedure, and containing the consent waiver.
- Parent Instructions (Appendix B) listing package contents so that parents could be sure they had all of the materials before they started.
- Parent Survey (Appendix C) which asked questions about adoption, family composition, medical history, developmental or language concerns at different levels, and education and other activities of the child.
- Children's Communication Checklist (CCC-2), a standardized parent checklist (Bishop, 2003) (Appendix D).
- Student Assent (Appendix E) to be read by the Parent to obtain verbal consent from the child.
- Instructions and materials to guide the parent and child through writing a story. It was adapted for each level from Kindergarten to Grade 6 to reflect changing expectations for writing skills for each grade. Sample instructions are provided in the appendices for Grade 1 (Appendix F) and Grade 4 (Appendix G).

- Student Instructions - for Grade 4 to 6 only (Appendix H).
- a Teacher's package (Appendix I) in an envelope labeled "Return to the Parent" containing
    - -a letter of introduction and request for a photocopy of the child's school writing
    - -a brief survey to confirm that the teacher was familiar with the child
    - -Academic Competence Evaluation Scales (ACES) Teacher Form, a standardized teacher rating of indicators of student academic competence

Ideally, each completed survey package would provide information from the parent, the child and the child's teacher. However, children and teachers were given a choice to participate so only the parent's information, the Parent survey and CCC-2 were required. The information teachers and students contributed were collected to substantiate the information the parent provided and allow greater depth for analysis.

Assessment Instruments

To collect information about language and academic skills from parents and educators, standardized instruments were selected for easy understanding and reasonable time requirements for the respondents as well as the availability of comparison data.

Children's Communication Checklist (CCC-2). The *Children's Communication Checklist* (CCC-2) (Bishop & Baird, 2001) is a standardized parent checklist used to screen for language impairments in children from the age of 4 to 16. Parent report has been shown to be reliable (Bishop, 2003; Bishop & Baird, 2001; Norbury et al., 2004). Designed to "identify children whose scores fall outside the normal range for their age", the CCC-2 differentiates between children with communication impairment and those with typically developing language (Bishop, 2003) based on information provided by an adult who is familiar with a child's language in everyday life. Although the CCC-2 is not a diagnostic test, it provides information that helps to identify children who may benefit from a more detailed evaluation. More extensively used in the United Kingdom, the CCC-2 has been shown to work with Canadian children (Quiring & Tovillo, 2003) and was used by Glennen and Bright (2005) in their followup study of Eastern European children adopted in North America.

Parent responses to questions about communicative behaviour on the CCC-2 are divided into 10 scales. *Speech, Syntax, Semantics*, and *Coherence* assess aspects of language structure, vocabulary and discourse and *Inappropriate Initiation, Stereotyped Language, Use of Context,* and *Nonverbal Communication* cover pragmatic aspects.Two additional scales, *Social Relations* and *Interests* assess behaviours usually impaired in children with Autism Spectrum Disorder. The scores from the first eight scales are combined to produce a General Communication Composite (GCC) which can be used to identify children who may have clinically significant communication problems (Bishop, 2003). A discrepancy between the sums of the scales for vocabulary and structural aspects, *Speech*, Syntax, Semantics, and *Coherence* and scalesfor pragmatic aspects, *Inappropriate Initiation, Nonverbal Communication, Social Relations, and Interests,* generates the pattern of impairment reported as a Social Interaction Deviance Composite (SIDC) which "can help identify children with a communicative profile characteristic of autism" (Bishop, 2003).

Academic Competence Evaluation Scales (ACES). On the *Academic Competence Evaluation Scales* (ACES) (DiPerna & Elliott, 2000) teachers rate the student compared to their expectations for the grade at that school for *Academic Skills* and *Academic Enablers*, a total of seven categories. *Academic Skills* include: *Reading/Language Arts, Mathematics, and Critical Thinking.* The remainder consisting of *Interpersonal Skills, Engagement, Motivation,* and *Study Skills* comprise the *Academic Enablers*. Raw scores were converted into deciles for analysis.

Reading/Language Arts included skills of 'Reading comprehension,' 'Word-attack,' 'Vocabulary,' 'Identifying a main idea,' and so forth. 'Synthesizing related information,' 'Drawing conclusions from observations,' 'Generalizing', and 'Classifying' were part of *Critical Thinking. Academic Skills* total scores include these subscales of *Reading/Language Arts* and *Critical Thinking* as well as *Mathematics* skills like 'Computation', 'Pattern analysis', and 'Problem solving', a total of 28 teacher ratings for children from Kindergarten to Grade 2 and 33 for Grades 3 to 6.

Academic Enablers included *Interpersonal skills* such as 'follows classroom rules,' 'works effectively in a large group activity,' and 'Listens to what others have to say.' 'Volunteering to read aloud,' 'Assuming leadership,' and 'Asking questions' were

examples of skills included in *Engagement.* 'Is goal oriented,' 'Critically evaluates own work,' 'Persists when task is difficult' are examples of *Motivation,* and *Study Skills* include skills like 'Completes homework,' 'Prepares for class and tests,' and 'Pays attention in class.' For children in Kindergarten to Grade 2, there were 38 possible ratings and from Grades 3 to 6, 40 possible ratings.

For each skill within a set, the teacher could rate the student as *Far Below, Below, Grade Level, Above,* or *Far Above* with a corresponding numerical value of 1 to 5 or indicate that he or she has not had an opportunity to observe a skill. Scores were added to obtain a subscale total so if skills had not been observed and no score was given, more than two missing scores would result in an artificially lower score for the section. Any section with more than two missing scores was not included in analysis.

Writing Sample. Each student was asked to write a story from a picture prompt, as a way to collect, at a distance, a language sample that involved language use typical for school. Producing a written narrative is more challenging than telling a story orally (Gillam & Johnston, 1992) with a likelihood of more varied vocabulary and more grammatical sentences.

The writing procedure used was based on a writing task similar to the writing portion of standardized language arts tests for many provinces and states. A comparison of writing guidelines and rubrics for grade levels in many provinces and states showed similar expectations. Because direct assessment was not possible, the researcher felt this was the most appropriate language sample given that writing is an essential language form in school, the story was not based on a curriculum topic, and many provinces and states participate in national and international writing assessments.

Parents were provided with a script (See Appendix F and G) to guide their child through generating story ideas around the characters, setting, and events on a planning page so that when the child started writing, story ideas would be in place and time would be focused on linguistic skills of writing rather than generating story ideas. Expectations for the level, taken from rubrics for the grade level, were also included in the parent's instructions to read aloud to the child (See *Criteria,* Appendix F and G).

Data Analysis

Data compilation

Altogether, data from 73 packages was recorded and examined. Two packages were excluded from data analysis after Consistency Check scores of zero for the Children's Communication Checklist – Second edition (CCC-2) indicated that the data was not valid.

Data from the Parent Survey was entered on an Excel spreadsheet. Height and weight at the time of adoption and at the time of the study were converted to *z* scores using a web-based program, the Standard Height and Weight Calculator (June 2000). Specific information, like age at time of adoption, adoption height and weight *z* scores, current age, height and weight, medical concerns, parent education and so on were copied to a database in SPSS 15.0 for analysis.

The CCC-2 and ACES, both standardized instruments, were scored according to instructions in the respective manuals. Although hand scoring of the CCC-2 is possible, an electronic score sheet made it possible to enter the responses on the CCC-2 checklists on a data sheet and then generate raw scores, scaled scores and percentiles, as well as the two composites of GCC and SIDC on a summary sheet for each individual. Standardized scores from the CCC-2 and deciles from ACES were entered into SPSS.

In order to minimize inevitable subjectivity involved in scoring writing samples, the stories were scored according to rubrics for British Colombia Performance Standards (British Columbia Ministry of Education, 2002) except for Kindergarten which was scored with a rubric from San Jose Unified School District (2002). These rubrics were chosen after comparisons of writing standards available online from the US and Canada including Alberta, Ontario, New Brunswick, California, Ohio, Washington, and Florida because they provided detailed descriptions of expectations and examples. British Colombia Performance Standards rubrics have four levels, 'Not Yet Meeting' (NYM), 'Minimally Meeting' (MM), 'Fully Meeting' (FM), and 'Exceeding Expectations' (EE), for four components of writing. These components include *Meaning* or ideas and use of detail, *Style* or clarity and impact of the language, *Form* comprised of sequence and organization, and *Conventions* of sentence structure, spelling, and grammar.

Essential aspects of these components at the four levels are outlined in Quick Scales (See Appendix J) for fast reference but examples and additional detail in a full rubric were helpful for assessment.

Writing scores from writing samples commonly consist of components at different levels. For example, one story may show EE in *Meaning*, FM in *Style*, NYM in *Form* and FM in *Conventions*. Another might have FM for *Meaning*, FM in *Style*, FM in *Form* and NYM in *Conventions*. When a numeric value was assigned to each level of a component, 1 for NYM, 2 for MM, 3 for FM, and 4 for EE, total scores from 4 to 16 were possible. The numeric values were entered used for statistical analysis. An overall level was also assigned to each writing sample based on the rubric from the BC Performance Standards (BC Ministry of Education, 2002). The overall levels were consistent with the numerical scores (EE = 15 - 16, FM = 11 - 14, MM = 7 - 10, and NYM = 4 - 6).

Comparison of upper and lower grades

Children were divided into two subgroups based on grade level in school related to Chall's (1996) stages of reading development. Primary Grades, when the mechanics of reading and writing are taught, are generally considered to be Kindergarten to Grade 2 or 3. For comparison of upper and lower grades in this study, the participants were split into Kindergarten to Grade 2 (Lower Grades) and Grade 3 to 6 (Upper Grades) to fit the ACES grouping for decile scores and to balance the numbers in the two groups.

Reliability

To ensure reliability, one in five packages or 20% of the data entered was checked for point-to-point accuracy by the investigator. Seven typing errors were found and changed and a visual scan was done to check for any other scores that did not fit the pattern for the column. One cell in a formatted column had a changed format and was also corrected. Reliability was over 95%.

The investigator and another teacher who was familiar with use of the Quick Scale rubric scored 53 of the 59 scripted stories independently. There was a 1-point difference in rater scores for eight of the story evaluations and a 2-point difference in

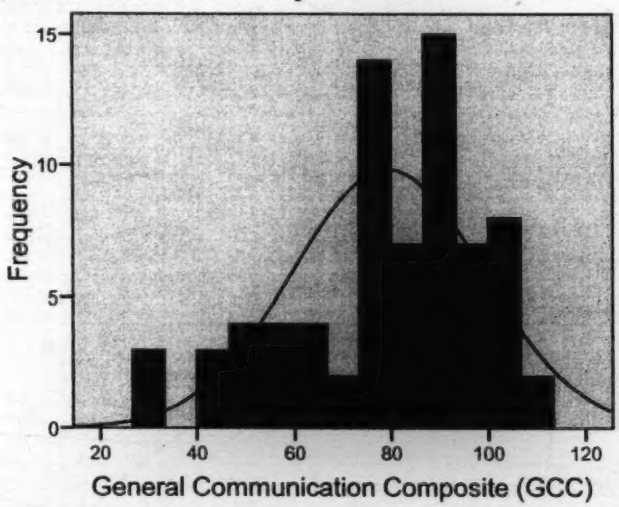
another five. When there was disagreement, the final score was arrived at by consensus after consulting the complete Rating Scale and examples provided in the Performance Standards (BC Ministry of Education, 2002). The differences were never enough to change the category (e.g., from FM to EE). Scores for stories NYM and EE, the extremes, had less discrepancy in scores than MM and FM, average scores for the grade.

CHAPTER 3: RESULTS

CCC-2 Results

The CCC-2 Scoring program completes an internal consistency check to determine if the parent responses are consistent. Inconsistent responses suggest a failure to understand the rating system and result in invalidation of the CCC-2. As reported earlier, of the 75 completed CCC-2 forms, two were excluded after test score analysis showed that responses to questions were not consistent. The distribution of GCC scores for the participants is illustrated in Figure 6.

Figure 6
General Communication Composite scores



N = 73; Mean = 78.15* (18.82)

*Note: 80 is the normative sample mean for the GCC

Table 3 shows the mean and standard deviation of all subscale scores and GCC scores for the entire sample and for the two grade level subgroups. A one sample *t*-test showed that there was no significant difference between the mean of the GCC scores of the CAC and the sample norm of 80 ($t(72) = -.84$, $p = .40$). In addition, one sample *t*-test comparisons between the group mean and the sample mean for the 10 individual subscales indicated no differences on any of the subtests using a corrected probability level of .005 (.05 divided by 10 tests). Details of *t*-test results comparing CAC with norms are provided in Appendix K. An independent samples *t*-test (two-tailed)

comparing upper and lower grades for GCC scores ($t(70) = .71$, $p=.48$) and individual scales of *Speech, Syntax, Semantics*, and *Coherence Inappropriate Initiation, Stereotyped Language, Use of Context,* or *Nonverbal Communication* were also not significant (see details in Appendix L).

Table 3
CCC-2 scale scores, Mean and Standard deviation

	All grades N=73 Mean (SD)	**K to Gr 2 N=38** Mean (SD)	**Gr 3 to Gr 6 N=35** Mean (SD)
Vocabulary and structure aspects			
Speech	9.16 (3.34)	8.95 (3.65)	9.40(3.01)
Syntax	10.51 (3.04)	10.76 (3.27)	10.23 (2.80)
Semantics	10.18 (3.59)	10.68 (3.28)	9.63 (3.87)
Coherence	9.75(3.23)	10.08 (3.24)	9.40 (3.23)
Pragmatic aspects			
Inappropriate initiation	9.70 (3.14)	9.61 (3.08)	9.80 (3.25)
Stereotyped language	9.81 (2.83)	9.71 (2.75)	9.91 (2.96)
Use of context	9.60 (3.50)	9.95 (3.70)	9.23 (3.26)
Nonverbal communication	10.03 (4.77)	10.13 (3.13)	9.91 (6.12)
Behavioural aspects			
Social relations	9.51 (3.11)	10.08 (3.06)	8.89 (3.07)
Interests	9.05 (2.58)	9.55 (2.20)	8.51 (2.87)
General Communication Composite (GCC)	**78.15(18.82)**	**79.66 (18.82)**	**76.51 (18.95)**

Note: Normative sample mean is 10.00 for each scale and 80.00 for the composite GCC. There is no statistical difference between the GCC means for the two grade groupings.

ACES Results

Teachers of 52 of the 73 children, just over 70%, completed the ACES form. When teachers were unable to report on individual behaviours, some subscales taken out (according to scoring instructions), affecting the final count for totals for *Academic Skills* and *Academic Enablers.* Table 4 shows the mean score for individual *Academic Skills* and *Enablers* as well as the mean overall.

Table 4
ACES standard scores (deciles)

	All Grade Levels		K to Gr 2	Gr 3 to Gr 6
	N**	Mean (SD)	[N] Mean (SD)	[N] Mean (SD)
Academic skills				
Reading/Language Arts	49*	7.29 (2.15)	[29] 7.24 (1.99)	[20] 7.35 (2.41)
Critical Thinking	50*	6.76 (2.54)	[31] 6.65 (2.50)	[19] 6.95 (2.66)
Total Score				
(including Mathematics)	**47***	**6.89 (2.29)**	**[29] 6.93 (2.34)**	**[18] 6.83 (2.26)**
Academic Enablers				
Interpersonal skills	49*	7.33 (236)	[29] 7.00 (2.38)	[20] 7.80 (2.31)
Engagement	49*	6.96 (2.74)	[29] 6.31 (3.05)	[20] 7.90 (1.92)
Motivation	46*	7.78 (2.04)	[27] 7.33 (2.11)	[19] 8.42 (1.81)
Study skills	45*	7.76 (2.07)	[25] 7.44 (2.20)	[20] 8.15 (1.87)
Total Score	**N=42***	**7.98 (1.93)**	**[3] 7.65 (2.08)**	**[19] 8.37 (1.71)**

* Mean (SD) for each scale is 5.00 (0.05)
** Fifty-two out of seventy three participants returned ACES forms. Of these, a few were incomplete due to instructions for K-2 to "Stop Here" which referred to a section and not the complete form as it was sometimes interpreted. As well, following scoring instructions for the test, subscale scores were omitted when there were more than two skills not observed in a section.

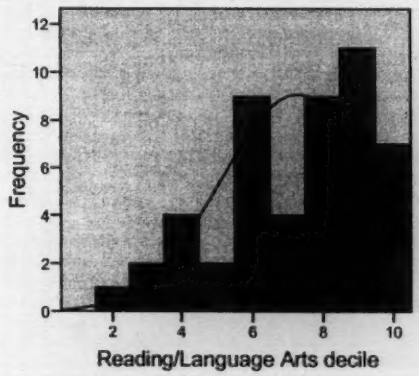
The *Academic Skills* total score includes *Reading and Language Arts*, *Critical Thinking*, and *Mathematics*. The *Academic Enablers* total includes the subscales, *Interpersonal skills, Engagement, Motivation, and Study Skills.* One sample *t*-test comparisons between the group mean and the sample mean for *Academic Skills* or

Academic Enablers and each subscale shows the mean of CAC was significantly higher than the expected mean decile of 5 (see Appendix M for details). There were no significant differences between upper and lower grade groups (see Appendix N).

The three histograms in Figure 7 below show the distribution of scores for *Reading/Language Arts*, *Academic Skills*, and *Academic Enablers*. Despite *Academic Enablers* tending toward higher deciles, *Reading and Language Arts* and *Academic Skills* are distributed from deciles of 2 to deciles of 10.

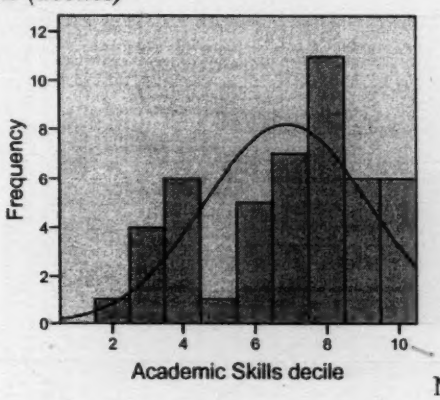
Figure 7
Reading/Language Arts (deciles), Academic Skills (deciles), Academic Enablers (deciles)

Reading/Language Arts (deciles)



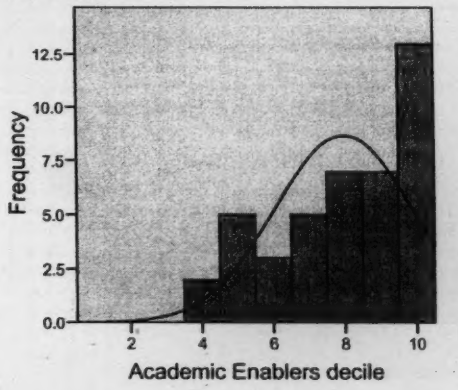
N = 49; Mean = 7.29 (2.15)

Academic Skills (deciles)



N = 47; Mean = 6.89 (2.29)

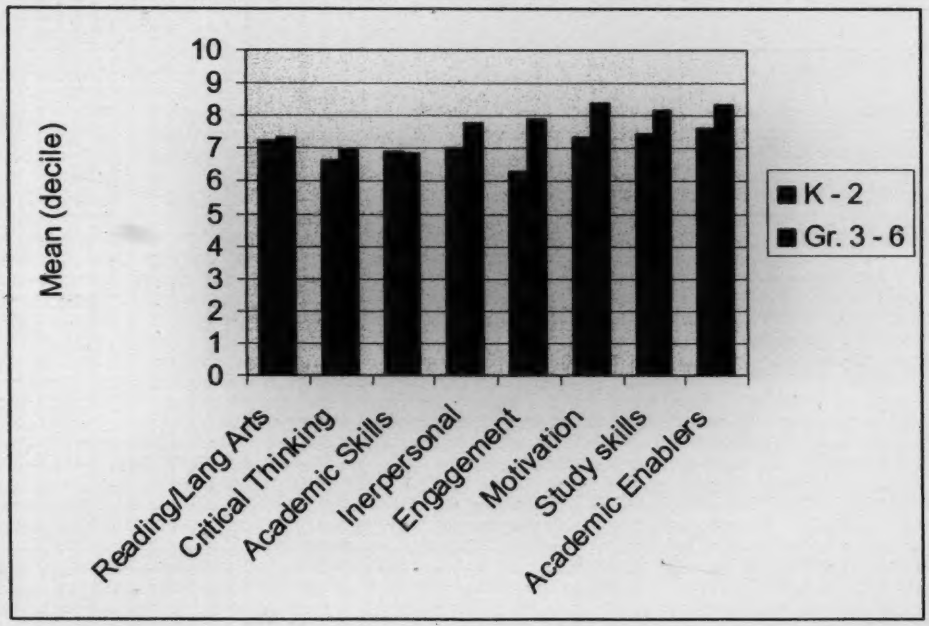
Academic Enablers (deciles)



N = 42; Mean = 7.98 (1.93)

A comparison of upper and lower grade scores on ACES subscales shows upper grades had a slightly higher mean than lower grades on each subscale (See Figure 8). For most of the individual subscales, differences were not statistically significant using a corrected probability level of .008 (.05 divided by 6 tests). Only one subscale, *Engagement*, was significantly different for the two groups ($t(47) = -2.24$, $p = .03$). (See Appendix L for detailed *t*-test results for all subscales and composites.)

Figure 8
Comparison of upper and lower grade ACES standard scores in deciles



ACES Scores are rated as *Developing*, *Competent*, or *Advanced*. For *Academic Skills* a decile of 4 or less for K – 2 and 5 or less for Grades 3 to 6 is *Developing* or not yet *Competent*. Deciles of 9 and 10 are *Advanced* at all levels, a level reached by 12 of the 47 children with scores.

A total of seven children, 4 out of 29 from K to Grade 2 and 3 out of 20 from Grade 3 to 6 had *Reading /Language Arts* scores at the *Developing* Level. Three of these had deciles of 2 or 3. Eighteen children out of 49 had scores in the *Advanced* range.

The *Developing* level for *Academic Enablers* is a decile of 2 or lower. None of the children had *Academic Enablers* lower than a decile of 4.

Of the 16 children with CCC-2 scores that were a concern, ACES results were not available for six. *Academic Skills* deciles for another six of these children were all in the *Competent* range corresponding to GCC scores above 55 for three children but contrasting with GCC scores of 25 to 50 (below the clinically significant GCC of 55). For three children, GCC scores below 55 corresponded to ACES deciles in the *Developing* level. One child whose GCC was below 55 had an *Academic Skills* decile in the *Competent* range with a decile of 5.

Comparing *Academic Skills* deciles with GCC scores individually also showed some connections. As mentioned earlier, three children had scores for both Academic skills and GCC that call for further assessment. Four others had low GCC scores, 58 to 65, one had a score of 75, and four others ranged from 87 to 91. *Academic Enablers* ranged from 4 to 9 for these children although scores for 4 of 12 children were unavailable.

Writing Results

Not all of the children completed the scripted story. Sixty-three percent (46) of the packages contained both the scripted story and a story selected by the teacher or the family. Another 18% contained only the scripted story. Some parents reported that their child disliked writing or found it difficult and enclosed a previously written sample. Eleven percent of the participant packages had a selected story only and 8% (six packages) did not include a writing sample. The eight writing samples that were not scripted all fully met expectations for the grade (FM) although it was impossible to assign

a specific score because the length and formats varied greatly and it was difficult to know how much revision was involved. Scripted stories were easier to compare because the format was more similar. As well, there was likely a more standard approach to the writing task because instructions included time and revision guidelines.

For each child only one writing score was given. Where there were two samples, the writing selected by the teacher or parents was used as a confirmation of the scripted writing category including, 'not yet meeting' (NYM), 'minimally meeting' (MM), 'fully meeting' (FM), and 'exceeding' expectations (EE) taken from the BC performance standards rubrics. (See Appendix J for Quick Scales for Grade 1 and Grade 4).

Table 5
Writing results based on Grade level rubrics

Level of Writing Skill	**Total** N=66	**K –Gr 2** N=36	**Gr 3 – 6** N=30
Exceeding Expectations	20	14	6
Fully Meeting Expectations	35	15	20
Minimally Meeting Expectations	11	7	4
Not Yet Meeting Expectations	0	0	0

As shown in Table 5, all of the children's stories met expectations, at least minimally, for their grade level. Thirty percent of writing 'exceeded expectations' for the Grade level and a total of 83% fully met or exceeded expectations. About 16% were minimally meeting expectations but none were 'Not yet meeting expectations'. Because there are no norms for the writing component, results from provincial tests were used to compare scores. For example, in British Columbia in 2005, 93% of Grade 4 students met, including minimally met, or exceeded expectations. Ninety-one percent of Alberta Grade 3 students and 85.1% of Grade 6 had "acceptable" or "excellent" results (comparable to FM and EE) for 2005-2006 (Alberta Government Achievement Testing Program). These results vary slightly from year to year and from school to school and even district to district within a province or state.

Correlations between CCC-2, ACES, and Writing Scores

Pearson Product Moment correlations were used to examine relationships between assessment scores obtained from the different dependent measures, including the GCC from the CCC-2, the deciles for the Academic Skills and Academic Enabler composites from the ACES, and the numerical score obtained from the written story analysis (shown in Table 6). N varied depending on the information available from participants. The GCC scores were not significantly correlated with either the *Academic Skills* or *Academic Enablers* composites from the ACES. *Academic Skills* and *Academic Enablers* were significantly positively correlated with each other. In addition, writing scores were significantly correlated with *Academic Skills*, but not with *Academic Enablers*.

Table 6
Correlations between dependent measures

	1.GCC	2.AS	3.AE	4.WS
1. General Communication Composite	-	.244 N=47	.186 N=42	.259* N=59
2. Academic Skills		-	.442** N=39	.328* N=41
3. Academic Enablers			-	-.051 N=35
4. Writing Score				-

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Although the *Academic Skills* composite of the ACES provides an overall measure of academic performance, we were particularly interested in the *Reading/Language Arts* subscale scores. As shown in Table 7, *Reading/Language Arts* scores were significantly correlated with both *Academic Enablers* and the Writing scores, but not with the GCC. This lack of correlation may be due to different language requirements of the measures themselves (e.g., the GCC focuses on conversational abilities and pragmatic and social aspect of language use, whereas the R/LA assesses academic language and literacy).

Table 7
Correlation between Reading/Language Arts subscale and other dependent measures

	GCC	Academic Enablers	Writing Score
Reading/Language Arts	.240 N=49	.413** N=41	.363* N=42

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Correlations between Dependent Measures and Child Factors

Because the CCC-2 and ACES scores were not significantly correlated with each other, correlations with various child factors were examined for both the GCC and *Academic Skills* measures separately (see Table 8). Pearson Product Moment correlations were used to determine the relationship between these measures and the child's age at adoption, time (if any) spent in foster care, height z-score, and weight z-score. Spearman's *rho* correlations were used to investigate the relationship between a variety of factors thought to affect language development, including parent education level, early medical concerns, and language concerns at the early, preschool and school stage.

Table 8
Correlation of GCC and Academic Skills scores with factors thought to affect language development

	GCC		*Academic Skills*	
	Pearson *r*	Spearman *rho*	Pearson *r*	Spearman *rho*
Age at Adoption (N = 73)	-.444**	-	.008	-
Months in Foster Care (N = 73)	-.121	-	-.458**	-
Height z-score (N = 64)	.060	-	-.065	-
Weight z-score (N = 69)	.146	-	-.151	-
Early language concerns (N = 73)	-	-.217	-	.022
Preschool language concerns (N=73)	-	-.442**	-	-.054
School age language concerns (N=73)	-	-.509**	-	-.099
Hearing Concerns (N=73)	-	-.082	-	.059
Early medical concerns (N=73)	-	-.140	-	.115

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Age at adoption was significantly negatively correlated with the GCC scores (meaning that the older the child was at adoption, the lower the GCC), as were parental concerns about language at preschool and school age. No other factors were significantly correlated with the GCC. The number of months in foster care was the only factor significantly negatively correlated with *Academic Skills (*meaning that more time in foster care corresponded with lower *Academic Skills).* This negative correlation was unexpected, as foster care is generally expected to provide a better environment for language acquisition than orphanage care, but may be due to confounding effects of other child factors, such as age at adoption or medical status. Time in foster care was reported for 14 children ranging from 1 month to 21 months but only 4 of the 14 were in foster care the whole time prior to adoption. The other 10 children spent time in both foster care and an orphanage which may also have had an effect.

A crosstab comparison of the group of 56 children with CCC-2 scores within normal limits and the group of 17 children with scores that may indicate concern shows that higher percentages of children with scores within normal limits were adopted at a younger age. Eighty-five percent were adopted before the age of 15 months in contrast with 56% of children whose scores were not within normal limits adopted before this age. A *t*-test comparing the adoption age of these groups showed that there was a significant difference ($t(71) = -2.89$, $p=.005$). A crosstab comparison of the ACES *Academic Skills* also had a higher proportion (42 out of 47 or 85%) of children adopted at younger ages who were *Competent* to *Advanced* compared to 3 out of 5 (60%) adopted at younger ages at the *Developing* level although the *t*-test comparing the groups did not show a significant difference ($t(45)= -.75$, $p = .46$) possibly due to the smaller sample size.

Activities such as reading at home, library visit frequency, time spent watching television or playing video games and participating in extracurricular activities like clubs, private lessons and sports were also compared to the GCC score and *Academic Skills* decile. Spearman correlations (one-tailed) showed significance at the 0.05 level for Reading at home and GCC scores. Neither GCC scores nor *Academic Skills* were significantly correlated with any of these activities.

A Closer Examination of Individual Scores

The CCC-2 was designed to identify children with pragmatic language deficits, but reportedly can also be used to screen for general communication disorders. Although the group means did not differ from the sample mean, an examination of individual scores revealed a higher percentage of children than would be expected from the norms who may be having some difficulty. Of the 73 children with valid CCC-2 scores, 56 individuals or 77% had scores within normal limits. A typical population is expected to have about 84% within normal limits.

The 17 children whose scores indicated a need for a more detailed evaluation represented a range of different profiles. Altogether twelve children had a GCC below 55 or 3 or more subscale scores below the 10th percentile. For five children with scores in this category, further investigation is warranted although the scores do not indicate a specific language problem (see Appendix 0 for detailed score profiles). Three children had profiles indicative of Specific Language Impairment (SLI) with a GCC below 55 and SIDC above 9, although scores for one are very close to the cut off (see Appendix P for detailed profiles).

Scores of the remaining 4 out of 12 children had profiles suggestive of an Autistic Spectrum Disorder (see Appendix Q) including three with a low GCC combined with an SIDC below zero and one of with a *Social* score and *Interest* score below the 6th percentile in addition to a GCC score below 55. No concerns or unusual behaviour were reported for the child with low *Social* and *Interest* scores. Parents of the other three children reported noticing that some behaviours or language was unusual. Two had some early interventions services (although none for Speech and Language) and were assured that their child would 'grow out of' the behaviour.

Because the CCC-2 is not used to make a diagnosis these children would benefit from direct assessment, especially where parents already have reported concerns. Certainly those who were told their child would 'outgrow" the behaviours deserve a more thorough investigation.

In addition to the twelve children mentioned above, five children had GCC scores above 55 combined with Social Interaction Deviance Composite (SIDC) scores of -15 or

less, a pattern rare in the normative sample but common to children with Asperger's Syndrome. (See Appendix R for score profile.) Four of these children were close to the -15 cut off and three of these had some high subscales scores (80% and higher) for *Speech, Syntax, Semantics*, and *Coherence* with lower subscale scores (although still within an average range) for the other scores comprising the SIDC (*Stereotyped Language, Nonverbal, Social,* and *Interests*). According to the manual, this mismatch results in scores of -15 to -18 for the SIDC, signifying a need for further assessment for Asperger's Syndrome but the overall profiles don't match the mean scaled scores of validation data presented by Bishop (2003). When ACES scores or writing results were available, no problems were evident and other than articulation difficulty for one child, none of the parents expressed concerns about their child's language. One score of -24 more closely matches the profile for ASD but still does not fit the typical pattern. Language and some behaviour concerns (e.g. sensory integration disorder, attention deficit hyperactivity disorder) were reported for this child although ASD/Asperger's was not.

CHAPTER 4: DISCUSSION

Performance of CAC Compared to Grade Level Norms

Previous research has shown that children adopted from China (CAC) as infants become proficient in everyday language in 16 to 24 months (Tan & Yang, 2005; Pollock & Price, 2005; Roberts, Krakow et al., 2005). By early school age, many have caught up to or even surpassed their peers who have been surrounded by English from conception (Roberts et al., 2005). The results of this study support these findings. Although a slightly higher than expected percentage of CAC had GCC scores that may indicate some language concerns, most of them are doing very well at school, meeting or surpassing standards set for their grade level. This is comparable to results for preschool children adopted from China and in contrast to children adopted from Eastern European countries whose academic skills were affected by behavioural issues (Glennen & Bright, 2005).

Because information prior to adoption is extremely limited and not always accurate, correlating early experience with language development is problematic. In combination with heredity and diverse preadoption experiences, adoption of children from China is not a homogeneous experience even though certain characteristics including adoptive parent education and SES are more uniform than might be found in other population samples. This diversity is represented in the range of scores found in the assessments used in this survey.

As a group, the participants in this study did not differ statistically from the norming sample on the CCC-2 and received significantly higher scores on the ACES. Overall, 59% had GCC scores on the CCC-2 that were higher than the expected mean of 80 and an even higher portion (70%) had deciles higher than 5 for *Academic Skills* on the ACES. In a typical population sample about 10% would be above the 90th percentile. Six out of 73 CAC (8%) had a score of 103 or better (90th percentile for the GCC). Another 10% would have scores below 56 (the 10th percentile). Ten of the 73 (13%) children had sores below 55. Thus, a slightly higher portion of the CAC than their English born classmates seem likely to have problems but those who are doing well equal or surpass norms for their age or grade level. These findings support the hypothesis that most CAC are highly resilient and make remarkable progress with language.

Although the group results were quite positive, closer examination of individual scores on the CCC-2 revealed 17 children with atypical profiles. Eight showed possible developmental language delay or SLI. However, the other 9 had profiles suggestive of ASD or Aspergers. This was an unexpected finding, as a higher prevalence of ASD has not been reported in previous studies of children adopted internationally and the prevalence of ASD in the North American population is 1 in about 150 (Centers for Disease Control and Prevention, 2006). Of four children with profiles suggestive of ASD (See Appendix Q), one was clearly borderline (GCC = 53, SIDC = -1). Of the five children with an SIDC of -15 or below, indicative of Asperger's Syndrome see Appendix R), there was no indication of any reason for concern in either the Parent Survey or in the ACES scores for 4 children. In addition, their pragmatic and behavioural subscale scores were all within normal limits (albeit lower than their subscale scores for vocabulary and structure). The scores of the fifth child, with an SIDC of -24, could be more reasonably interpreted as possible Asperger's because of the distance from the cut off, the occurrence of scores below average, and support from comments from the Parent Questionnaire.

While the CCC-2 is not intended as a diagnostic tool, the unexpectedly high occurrence of profiles suggestive of ASD or Asperger's point to a need for more research. Perhaps the current sample of children was not representative of the population of CAC. In addition, CAC differ from the norming samples for the CCC-2 in a number of ways. For example, parents are older and more highly educated and spend considerable time with their children, resulting in an increased time that CAC spend with adults along with possible increased intensity of focus. Conceivably the exceedingly high scores on vocabulary and structural aspects in combination with more average scores in pragmatic or behavioural aspects represent a profile not yet considered in interpreting the CCC-2.

Most scores for ACES and CCC-2 fit the criteria outlined in the respective manuals but interpretation of the atypical summaries with an SIDC slightly below -15 was impossible without additional information.

As a group, the participants in this study did not differ statistically from the norming sample on the CCC-2 and received significantly higher scores on the ACES. Overall, 59% had GCC scores on the CCC-2 that were higher than the expected mean of

80 and an even higher portion (70%) had deciles higher than 5 for *Academic Skills* on the ACES.

Comparison of Performance in Upper and Lower Grade Level

Despite a higher than expected incidence of CCC-2 scores not within normal limits, this study has not found any support for concerns that children who are doing well will suddenly start struggling or that higher grade levels expose learning difficulties that weren't evident earlier. A comparison of upper and lower grades did not show any significant difference in family composition, adoption age, time in foster care, or early medical concerns, hearing concerns, and adoption height and weight. Nor was there a significant difference in grade level scores on the standardized assessments. In addition, responses to the parent questionnaire didn't indicate a higher level of concern for school age years than in the preschool years.

Relationship between Performance and Child Factors

On the basis of adoption information and family composition, there is no easy way to predict which children will do well and which will face challenges in the school system. The resulting lack of significant correlation between early medical concerns, hearing concerns, and adoption height and weight and assessment scores supports previous findings for children adopted from China (Pollock, 2005; Roberts et al., 2005), and reflects the fact that the majority are healthy at adoption and quickly overcome any delays in physical development.

Parental concern at the preschool and school levels was significantly correlated with GCC, indicating that parents' responses on the CCC-2 were consistent with their reported level of concern. The lack of significant correlation with earlier concerns may suggest that some parents worry unnecessarily about their children, or may reflect the fact that children experience rapid catch-up during the first year or two post-adoption. At all levels, after adoption, at the preschool level, and at school age, parent's concerns about language were significantly lower for children whose GCC scores were within normal limits indicating that parents were consistent in their concern.

A comparison of the group of 56 children with CCC-2 scores within normal limits and the group of 17 children with scores warranting further investigation (not within normal limits) shows higher percentages of concerns at early stages. Table 9 below shows the percentage of families who reported concerns about the language of their child shortly after adoption, at the Preschool stage, and at the School level. While the concerns for children with scores in the normal range decrease as children grow older, parental concerns for children not within normal limits remain fairly consistent from the early stage to preschool and then increase at school age. This somewhat higher percentage than typically expected, points to the importance of validating parents' concerns and making services available.

Table 9
Percentage of parents reporting concerns about their child's language at three developmental levels.

GCC outcome	Early Language concern	Preschool Language concern	School Age Language concerns
Within normal limits	39%	18%	16%
Not within normal limits	57%	57%	69%

Limitations

Correlation analyses of data were a challenge when the CCC-2 results provided the only complete set of assessment data, in part because of gaps in information and a smaller sample size for comparison. Also, it is likely that missing writing samples represented at least some children who aren't comfortable with their writing skills and therefore most reluctant to write. Writing samples that parents and teachers provided when the child decided not to participate in the scripted writing were extremely helpful in determining a rough level of competence but were much more difficult to assess because the formats varied greatly and the amount of revision and support were unknown. More complete data sets or larger sample size would have been more effective. Correlations involving time in foster care were possibly affected by the overlap with age at adoption; defining time spent in an orphanage might be a more meaningful measure.

The survey methodology used in the current study enabled the collection of data from a relatively large sample of children, but there are inherent limitations in parent and teacher report measures. Corroborating evidence from direct assessments would be useful in validating the information obtained in this study and clarifying scores attained through parent and teacher survey.

As well, overall the sample size is not large enough to generalize to the entire population of CAC especially because it is impossible to know whether there may have been some selection bias in that parents whose children are experiencing concerns might have been more willing to participate in their search for answers for their child.

Practical Implications

As earlier researchers (Pollock, 2005; Pollock & Price, 2005; Roberts, Krakow et al., 2005) have found, assessment instruments developed for English born populations appear to be appropriate for the CAC following two or more years post-adoption. The majority of children did well on the CCC-2, ACES, and standardized writing. When CAC lag behind on assessment measures, a full diagnostic battery would be helpful in providing more detailed information in order to provide support and services.

Although early concerns are not as closely tied to later language and learning challenges as preschool and school language concerns, it is possible that a combination of unfounded concern and early intervention led to children being provided extra support, which reduced later difficulties. Parents reported seeking out services for their child if they felt there was something unusual about their child's language development level. In a few instances, they were told to 'wait and see' or that despite their concern, their child was within normal range of development. Most children who began intervention during preschool years no longer required speech and language services in elementary school.

Future Directions

Direct assessment of CAC would be a more effective way of determining language and academic skills in order to follow the language development and academic

progress of a group of children from adoption through school ages and on to high school. Research is still needed to confirm that learning difficulties do not crop up unexpectedly and that most children who quickly acquire English as a SFL continue to do well through their course of education. It is likely that the children who have early difficulty continue to have difficulty and children who do well continue to do so. However, a longitudinal study in which the same children are followed from the early years through preschool and school will be necessary to confirm this conclusion.

As well, even with most scores fitting the guidelines set out in the scoring manuals of the assessment measures used for this study, there are profiles that do not fit the categories outlined in the CCC-2. These unusual profiles where most scores are within the normal range but others are well above may be indicative of atypical language development that is specific to CAC.

Conclusion

Most CAC appear to do extremely well in the school setting. The percentages of CAC children doing well or exceedingly well is similar to or better than the percentages expected for a typically developing population and on the whole, there are no significant differences showing that as a group CAC are doing less well than their English born peers. It is impossible to determine whether it is quality preadoption care, an enriched home environment, or parents' commitment to finding the services their children need at appropriate times that predispose CAC to doing well. Likely it is a combination of environmental and personal factors contributing to the remarkable adjustment made by CAC.

Interpretation of assessments for this study was not as straight forward as expected. Test results need to take the family's concerns into consideration and look more carefully at each child. Although it seems that standardized test norms established for a typically developing English speaking population for are appropriate for CAC there may also be some differences due to the children's strengths or even parental influence. Very few population samples include such a high portion of parents who are college graduates as groups of CAC or such a high proportion of children who are so passionate

about their interests. A combination of parent support and child eagerness is likely to have resulted in the highly positively skewed *Academic Enablers* seen in this population.

However, despite the success of the majority of CAC, a higher than expected percentage of CAC with language problems as reported by their parents is an indication that there are risks associated with SFL acquisition for some children. An examination of individual scores reveals some exceptional profiles. While it may not be accurate to state that a child is having difficulty when the lower scores are within the normal range, the inconsistency of scores may yield clues to language development and at the very least is a confirmation that there are unexplained individual differences.

Teachers and especially parents, because of their relationship with a child are in in an excellent position to observe language development and use. This combined with the parents' willingness to seek assessment and therapy for their child is a great advantage only if professionals are prepared to take their concerns seriously and provide appropriate services. At times, services may be required to encourage weaker areas of language development in order to achieve a more balanced development.

Most encouraging is the consistency of scores through grade levels. There is no sudden decline at the grade 4 level and no evidence that language problems suddenly appear in the upper grades. Parents indicated that children who were doing well at the preschool level continued to do so and teachers confirmed that parents had not misinterpreted language development. Children with early difficulties may need more support in the school system, the same as their English born peers with early difficulties.

Even through the distance of the surveys it was evident that most parents (and teachers) are captivated by the CAC in their families and classrooms. Their desire to provide the best is apparent, even where there are concerns. Professionals have a responsibility to take concerns seriously because of the high risk involved with SFLA while at the same time keeping in mind that most children have a potential to do at least as well as their English born peers with a similar range of ability.

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Appendix B: Parent Instructions

Parent Instructions

Language and Academic Skills of School Aged Children Adopted from China as Infants

K. Urichuk, University of Alberta

1. Check to be sure your package contains the following:
    - a letter of information for parents
    - Parent Instructions
    - Parent Survey
    - The Children's Communication Checklist/CCC-2
    - Parent Report Measure of School-Age Language
    - Writing script
        - Student Assent (on the back of Parent Instructions)
        - Student Instructions (only for Grade 4 and up)
        - Story Plan - planning page
        - writing paper
    - a Teacher's package in an envelope labeled "Return to Parent":
        - a letter of information for teachers
        - Teacher Instructions
        - Teacher Survey - on back of Instruction page
        - Academic Competence Evaluation Scales/ ACES Teacher Form
2. Take the Teacher's package to your child's teacher. There are instructions for the teacher in the package. These materials are to be returned to you when complete.
3. Fill out the Survey, the CCC-2 checklist, and the Parent-Report Measure.
4. Read the Student Assent to your child. If he/she agrees to participate, use the writing script to guide your child through planning and writing a short story on the enclosed paper.
3. Use the writing script to guide your child through planning and writing a short story on the enclosed paper.
4. When your child's, the teacher's, and your parts are finished, return the following materials to the researcher.
    - parent survey
    - The Children's Communication Checklist/CCC-2
    - Parent Report Measure of School-Age Language
    - Writing script with
        - planning page
        - writing paper with writing sample
    - the envelope from your child's teacher including:
        - survey questions
        - Academic Competence Evaluation Scales/ ACES Teacher Form
        - photocopy of a writing sample

IMPORTANT: Return of this survey indicates that you have read and understood the information letter and the need for a signed consent is waived.

Parent Survey

Language and Academic Skills of School Aged Children Adopted from China as Infants

K. Urichuk, University of Alberta

Background Information

Today's Date: _____

Child's name: _____ Sex: ☐M ☐F Grade _____

Date of birth: dd/mm/yyyy _____ Date of adoption: dd/mm/yyyy _____

Orphanage: Name: _____ Location: City/Prov. _____

Length of time child lived at the orphanage (if known): _____

Was child ever in foster care or a family home prior to adoption? ☐yes ☐no

If yes, answer: When? _____

How long? _____

Additional comments: _____

_____

_____

_____

Medical/Developmental History:

Weight at time of adoption: _____ **Height** at time of adoption: _____

Current Weight: _____ **Current Height:** _____

Hearing: Has your child had a hearing test? ☐yes ☐no

If yes Age when tested: yr/mo: _____ Result: _____

Ear infections: Number of ear infections since adoption:

If yes How were these infections treated? _____

Vision: Has your child had his/her vision tested? ☐yes ☐no

If yes Age when tested: yr/mo: _____ Result: _____

Medical conditions: Has your child had any medical conditions? ☐yes ☐no

If yes ☐abnormal thyroid function ☐anemia ☐elevated lead levels ☐parasites

☐cleft lip/palate ☐heart murmur ☐other _____

Results: _____

Medical concerns: Does your child have any current medical issues? ☐yes ☐no

If yes Describe briefly. _____

Developmental delays: Was your child been screened for developmental delays at the time of adoption? ☐yes ☐no

If yes Screened by: ☐SLP ☐OT ☐PT ☐School ☐other _____

Result: _____

Intervention services: Has your child received intervention services? ☐yes ☐no

If yes ☐speech language services ☐occupational therapy ☐physical therapy ☐other _____

Age of intervention: _____ Outcome: _____

Language profile:

Chinese dialect spoken in city/province of orphanage, if known:_____
(for example, Mandarin, cantonese, Gan, etc.)

Is **English** the primary language? -At home: **yes no** -At school: **yes no**

How would you describe you child's current use of the English language?

☐advanced ☐age appropriate ☐slightly below average ☐substantially below average

English: Time child spends speaking and listening to English compared to any other language:

☐100% ☐75-100% ☐50-75% ☐25-50% ☐less than 25% ☐never

Chinese: Time child spends speaking and listening to Chinese

☐100% ☐75-100% ☐50-75% ☐25-50% ☐less than 25% ☐never

What is your best guess of your child's current level of communication in Chinese?

☐sentences ☐over 3 phrases ☐less than 3 phrases ☐over 50 words ☐5 - 50 words ☐up to 5 words ☐none

Additional languages: Time child spends speaking and listening to another language.

Specify language_____

☐100% ☐75-100% ☐50-75% ☐25-50% ☐less than 25% ☐never

Speech-Language Assessment/Intervention History:

Early speech-language:

Did you have any concerns about your child's speech and language in the first year post adoption? **yes no**

If yes Sought speech-lang evaluation **yes no** Describe results:_____

Nature of problem: ☐articulation ☐receptive language ☐expressive language ☐other _____

Received speech-lang therapy **yes no** Frequency:_____ Duration: _____

Outcome:

☐goals met/discontinued therapy ☐goals not met/discontinued therapy ☐goals not met/continuing therapy

Pre-school speech-language:

Did you have any concerns about your child's speech and language in the first year post adoption? **yes no**

If yes Sought speech-lang evaluation **yes no** Describe results:_____

Nature of problem: ☐articulation ☐receptive language ☐expressive language ☐other _____

Received speech-lang therapy **yes no** Frequency:_____ Duration: _____

Outcome:

☐goals met/discontinued therapy ☐goals not met/discontinued therapy ☐goals not met/continuing therapy

School age speech-language:

Did you have any concerns about your child's speech and language in the first year post adoption? **yes no**

If yes Sought speech-lang evaluation **yes no** Describe results:_____

Nature of problem: ☐articulation ☐receptive language ☐expressive language ☐other _____

Received speech-lang therapy **yes no** Frequency:_____ Duration: _____

Outcome:

☐goals met/discontinued therapy ☐goals not met/discontinued therapy ☐goals not met/continuing therapy

Additional comments:_____

_____

_____

Profile - Parent 1

Name: _____ Age range: ☐31 - 40 ☐41 - 50 ☐51 and over

Highest education level: ☐ Did not complete high school ☐ High school diploma/GED ☐ Some college
☐ College graduate ☐ Graduate/professional degree

Native language: _____ Other languages spoken fluently: _____

Are you studying or have your recently learned any Chinese language? **yes** **no**

Number of hours you work outside the home on average: ☐ 40 or more ☐30 - 40 ☐20 - 30
☐ 10 - 20 ☐ 0 - 10 ☐Not at all

Profile - Parent 2 (if applicable)

Name: _____ Age range: ☐31 - 40 ☐41 - 50 ☐51 and over

Highest education level: ☐ Did not complete high school ☐ High school diploma/GED ☐ Some college
☐ College graduate ☐ Graduate/professional degree

Native language: _____ Other languages spoken fluently: _____

Are you studying or have your recently learned any Chinese language? **yes** **no**

Number of hours you work outside the home on average: ☐ 40 or more ☐30 - 40 ☐20 - 30
☐ 10 - 20 ☐ 0 - 10 ☐Not at all

Family Profile

Other children in the household: Name: _____ Age: _____
_____ Age: _____
_____ Age: _____
_____ Age: _____

Other adults in the household: Name: _____ Relationship: _____
_____ Relationship: _____
_____ Relationship: _____

Other languages spoken in the household: Language: _____ Speaker: _____
_____ Speaker: _____
_____ Speaker: _____

Educational History:

Has your child attended daycare, playschool, junior kindergarten or kindergarten? **yes** **no**

If yes Fill out the relevant section below. Use school format for year: e.g. 2005-2006

	Year(s)	Type of program - describe e.g. Full day, half day, alternate days, Montessori, Immersion, other
Daycare	_____	_____
	_____	_____
	_____	_____
Playschool	_____	_____
	_____	_____
Junior Kindergarten	_____	_____
Kindergarten	_____	_____

Additional comments: _____
_____
_____

Activity profile:

Reading Do you or does someone else read to your child on a typical week night, Monday to Friday? **yes no**

If yes ☐more than 60 min ☐30 - 60 min ☐10 - 30 min ☐less than 10 min

Do you anyone else read to your child on a typical weekend, Saturday and Sunday combined? **yes no**

If yes ☐more than 60 min ☐30 - 60 min ☐10 - 30 min ☐less than 10 min

Independent reading: Does your child read/look at books or magazines for pleasure? **yes no**

If yes ☐daily ☐every 2 days ☐once a week ☐less than once a week

Average time ☐more than 60 min ☐30 - 60 min ☐10 - 30 min ☐less than 10 min

Homework: How much time does your child spend doing homework daily (average)?

☐more than 60 min ☐30 - 60 min ☐10 - 30 min ☐less than 10 min

Books in home: About how many children's books do you have in your home?

☐more than 150 ☐75 to 150 ☐21 - 75 ☐1-20 ☐none

Library visits: Do you or does your child have a public library card? **yes no**

How often do you go to the library with your child?

☐about once a week ☐ every two weeks ☐irregularly ☐never

Television: How much time does your child watch television on a typical **weekday**?

☐more than 60 min ☐30 - 60 min ☐10 - 30 min ☐less than 10 min

How much time does your child watch television on a typical **weekend**?

☐more than 60 min ☐30 - 60 min ☐10 - 30 min ☐less than 10 min

Videos How much time does your child watch videos on a typical **weekday**?

☐more than 60 min ☐30 - 60 min ☐10 - 30 min ☐less than 10 min

How much time does your child watch videos on a typical weekend?

☐more than 60 min ☐30 - 60 min ☐10 - 30 min ☐less than 10 min

Video games: Time your child spends playing video games on a typical **week day**

☐more than 60 min ☐30 - 60 min ☐10 - 30 min ☐less than 10 min

Time your child spends playing video games on a typical **weekend** (total):

☐more than 60 min ☐30 - 60 min ☐10 - 30 min ☐less than 10 min

Other activities: How much time does your child spend at other activities during the week?

clubs likeBrownies,Cubs	☐over 2 hours	☐up to 2 hours	☐None
private lessons	☐over 2 hours	☐up to 2 hours	☐None
sports	☐over 2 hours	☐up to 2 hours	☐None
visiting friends	☐over 2 hours	☐up to 2 hours	☐None
other: _____	☐over 2 hours	☐up to 2 hours	☐None
other: _____	☐over 2 hours	☐up to 2 hours	☐None

Any relevant information your would like to add to this survey:

_____

_____

_____

_____

Appendix D: Children's Communication Checklist (CCC-2)

By D. V. M. Bishop

Department of Experimental Psychology

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Student Assent

Language and Academic Skills of School Aged Children Adopted from China as Infants

K. Urichuk, University of Alberta

Procedure for obtaining verbal assent from child participants:

Before beginning the story script, please read this script:

A student from the University of Alberta wants to learn about children's writing. She wants to see how well you write a story. You will look at a picture and we will talk about some story ideas. When you think you have enough ideas, you will write a story about the picture.

No one except us and the university student will know you have written the story unless you tell them. Your name will not be on the story. You do not have to do this if you don't want to. If you want to stop at any time, just tell me. No one will be mad at you.

If you have any questions, I will be there to help you. Does this sound OK? Do you want to help?

Note:
Return of a written story indicates that your child understood that he or she is helping with research and a signed consent is waved.

Script for Story Writing

Grade 1

IMPORTANT:

Before beginning, please read the Student Assent Page* to the student. Proceed only with your child's permission.

This script is a guide. Rephrase as necessary during the instruction and planning stage. Once your child begins writing, he or she is to work ***independently*** *without any further guidance or suggestions.*

**Student Assent page is on the reverse side of Parent Instructions.*

Parent Script for Story Writing - Grade 1

1. This script is provided to guide your child through the stages of the writing process in a standardized way. Instructions that you read aloud to your child are in **bold**.

2. Please note that overall, 30 minutes are allotted to complete the writing piece for Grade 1. However, the number of minutes given for each section within *planning* the writing activities is provided as a guideline, and may be used with some flexibility.

(2 minutes) **Listen as I read the instructions. You will be writing a story about a gift. This will take about 30 minutes to complete.**

Overview

Total Time: about 30 minutes	
2 minutes	Overview and directions
7 minutes	Discuss writing topic, ask questions
1 minute	Read or discuss criteria
15 minutes	Written work - **Please don't go over this time limit.**
5 minutes	Looking back on your writing - **Please don't go over this time limit.**

Directions

1. Write in blue or black pen or pencil. If you write in pencil, press hard enough so that your writing is clear.

2. Double-space and write only on the dark lines so that you have room to make corrections and changes.

3. You do not need to use all the pages provided. Please do not use any more than the pages provided.

4. Only the story will be evaluated but planning pages need to be returned with this package.

5. You may use a dictionary or thesaurus.

6. Do you understand the directions?
If not, ask me questions.

Answer any questions to clarify the task. If there are any questions you were not sure about, record them here.

Listen carefully as I guide you through the pre-writing activities.

Discuss writing topic

(7 minutes total) **Look at the picture at the top of your writing paper.**

The Gift

In the picture, someone is giving something to a child. What do you think it could be? Who are the people in the picture? Why do you think the child got this gift? You will be writing a story about what you think happened.

Planning

Turn to the Story Plan page. We'll use this to plan for a story.
Purpose: to write an interesting story about a gift.

During planning discuss ideas with your child and you may spell key words. Once your child starts writing, allow your child to work at his/her own level without discussion.

1 minute **Look at the space called "A Gift."**
Think about what the gift was.
What does it look like?
What does it feel like??
How big or heavy is it?
Sketch or use words to describe the gift in your story in the space provided. You have one minute.

1 minute **Now look at the space called "Characters: Who."**
Who is in the story? Give your characters a name. Is there anyone else is in your story?
What do your characters look and act like. Brainstorm your ideas in the space provided. You have one minute.

1 minute **Now look at the space called "Setting: When, where."**
Decide when your story takes place.
Is it in the future, in the past, or now?
Decide where your story takes place.
Does it happen indoors or out? Where?
You have one minute.

1 minute **Now look at the space called "Problem." In this section, brainstorm the event(s) that happen in your story. Most stories have a problem that needs to be solved. What is the problem in your story? You have one minute.**

1 minute **Now look at the space called "Solution". How is the problem in the story solved?**
You have one minute.

Writing the story

Discuss the criteria

(1 minute) **Listen to the things that you can have in your story. Teachers will expect to see some things like this in your story.** (Parents, you may discuss these and/or read these to your child before he/she starts writing.)

Grade 1 Criteria

- Sentences or ideas are related. There is some detail.
- Simple sentence patterns may be repeated. Sample sentence starter format may be given. (Parent may print this on the planning page to be copied. e.g. The gift is....)
- Writing has meaning without explanations.
- Both capitals and small letters are used.
- Many familiar words are spelled conventionally.
- New or unfamiliar words are spelled phonetically or have been spelled by parent.
- There is some punctuation.

(Answer any questions. If you have any concerns, report them here.)

15 minutes **There are two and one half pages for writing but you are not expected to fill all of the pages. Your writing should be about 1/2 to 1 1/2 pages long. Remember to use some of the ideas from your Story Plan to help write your story. Do you understand what you are to do?**
Check to be sure your child is writing on the lined pages. Throughout the writing process, allow your child to work independently. **There is NO discussion allowed during or after writing.**

After 10 minutes, let your child know they have approximately five minutes left to bring their story to an end.

Look back on your writing

5 minutes **Go back and read what you have written. You have five minutes to make any small changes or additions. To do this, cross out with one line and write between the lines.**

**Without making corrections, please have your child tell/read you their story and write the intended words above their written words on their story page. This will help me understand any invented spelling.*

Story Plan

Characters: Who is in the story?

Setting: Where? When?

Problem:
What happens

The Gift

Solution: How does the story end?

Script for Story Writing

Grade 4

IMPORTANT:

Before beginning, please read the Student Assent Page* to the student. Proceed only with your child's permission.

This script is a guide. Rephrase as necessary during the instruction and planning stage. Once your child begins writing, he or she is to work ***independently*** *without any further guidance or suggestions.*

*Student Assent page is on the reverse side of Parent Instructions.

Parent Script for Story Writing - Grade 4

Student instructions are indicated when appropriate with page A or B and number 1 to 7. e.g. Student B - 4

1. This script is provided to guide your child through the stages of the writing process in a standardized way. Instructions that you read aloud to your child are in **bold**.

2. Please note that overall, 45 minutes are allotted to complete the writing piece for Grade 4. However, the number of minutes given for each section within *planning* the writing activities is provided as a guideline, and may be used with some flexibility.

(2 minutes) **Turn to page A, number 1. Listen and follow as I read. You will be writing a story about a gift. Altogether, this will take about 45 minutes to complete.**

Overview

Total Time: about 45 minutes	
2 minutes	Overview and criteria.
7 minutes	Discuss writing topic, ask questions.
1 minutes	Read or discuss directions.
30 minutes	Written work - **Please don't go over this time limit**
5 minutes	Looking back on your writing - **Please don't go over this time limit**

Discuss the criteria in the list below

Look at the Grade 4 list on Page A, number 2. Teachers expect to see things like this in your story. (Parents, you may discuss these and/or read these with your child before he/she starts writing.)

Grade 4
• Some supporting details, reasons, and explanations.
• Clear direct language. Words are not frequently repeated.
• Some variety in sentences.
• Introduces the topic.
• Middle is often a list of related but undeveloped reasons, examples, and details.
• Uses a variety of connecting words.
• Ending may be abrupt.
• Some errors, but these do not affect meaning
• Most sentences are complete; few run-on sentences.

Listen carefully as I guide you through the pre-writing activities.

Discuss writing topic. (Student page A-3)

(7 minutes total) **Look at the picture at the top of your writing paper**

The Gift

In the picture, someone is giving something to a child. What do you think it could be? Who are these people? Why do you think the child got this gift? You will be writing a story about what you think happened.

Planning (Student page B-4)

Turn to the Story Plan. You'll use this to plan for a story.
Purpose: to write an interesting story about a gift.

During planning discuss ideas with your child. Once your child starts writing, allow your child to work at his/her own level without discussion.

1 minute **Look at the space called "A Gift."**
Think about what the gift was.
What does it look like?
What does it feel like??
How big or heavy is it?
Sketch or use words to describe the gift in your story in the space provided. You have one minute.

1 minute **Now look at the space called "Characters: Who."**
Who is in the story? Give your characters a name. Is there anyone else is in your story?
What do your characters look and act like. Brainstorm your ideas in the space provided. You have one minute.

1 minute **Now look at the space called "Setting: When, where."**
Decide when your story takes place.
Is it in the future, in the past, or now?
Decide where your story takes place.
Does it happen indoors or out? Where?
You have one minute.

1 minute **Now look at the space called "Problem." In this section, brainstorm the event(s) that happen in your story. Most stories have a problem that needs to be solved. What is the problem in your story? You have one minute.**

1 minute **Now look at the space called "Solution". How is the problem in the story solved?**
You have one minute.

Writing the story

(1 minute) **Turn to page B, number 5. Listen and follow as I read the directions.**

Directions

1. Write in blue or black pen or pencil. If you write in pencil, press hard enough so that your writing is clear.

2. Double-space and write only on the dark lines so that you have room to make corrections and changes.

3. You do not need to use all the pages provided. Please do not use any more than the pages provided.

4. Only the story will be evaluated but planning pages need to be returned with this package.

5. You may use a dictionary or thesaurus.

6. Do you understand the directions?
If not, ask me questions. There is NO talking while you write.

Answer any questions to clarify the task. If there are any questions you were not sure about, record them here.

30 minutes **There are eight pages for writing but you are not expected to use all of the pages. Your story must not be more than seven pages long. Your writing should be about 3 or 4 pages long. Remember to use some of the ideas from your planning page to help you write your story. Do you understand what you are to do?** (Student B-6)
Check to be sure your child is writing on the lined pages and that they are writing only on the dark lines. Throughout the writing process, allow your child to work independently. **There is NO discussion allowed during or after writing.**

After 25 minutes, let your child know they have approximately five minutes left to bring their story to an end.

Look back on your writing (Student B -7)

5 minutes **Go back and read what you have written. You have five minutes to make any small changes or additions. To do this, cross out with one line and write between the lines.**

Story Plan

Characters: Who is in the story?

Setting: Where? When?

Problem:
What happens

The Gift

Solution: How does the story end?

Student Instructions

1. Follow along with your parent while they tell you about how long it takes.

Overview

Total Time: about 45 minutes	
2 minutes	Overview and directions
7 minutes	Discuss writing topic, ask questions
1 minute	Read or discuss criteria
30 minutes	Written work
5 minutes	Looking back on your writing

2. Before you start writing, follow along as your parent reads some of the things that may be in your story.

Grade 4
• Some supporting details, reasons, and explanations.
• Clear direct language. Words are not frequently repeated.
• Some variety in sentences.
• Introduces the topic.
• Middle is often a list of related but undeveloped reasons, examples, and details.
• Uses a variety of connecting words.
• Ending may be abrupt.
• Some errors, but these do not affect meaning
• Most sentences are complete: few run-on sentences.

3. Look at the picture at the top of your writing pages. In the picture, someone is giving something to a child. You will be writing a story about what you think happened.

A

4. Listen to the questions your parent asks while you plan your story.

Talk about your ideas and write key words on the Story Plan. If you have any questions ask your parent.

5. Follow along while your parent reads the directions. If you have any questions, ask.

Directions
1. Write in blue or black pen or pencil. If you write in pencil, press hard enough so that your writing is clear.
2. Double-space and write only on the dark lines so that you have room to make corrections and changes.
3. You do not need to use all the pages provided. Please do not use any more than the pages provided.
4. Only the story will be evaluated but planning pages need to be returned with this package.
5. You may use a dictionary or thesaurus.
6. Do you understand the directions? If not, talk to your parent.

6. Write a story that will be interesting for someone to read. You have 30 minutes. (No talking. You can use your planning page and these instructions pages.) After 25 minutes, your parent will warn you that you have only 5 minutes left. (If you finish earlier than 30 minutes, use the extra time to read your story and make changes to make it better.)

Write your story! It should be about 3 or 4 pages long.

7. After the 30 minutes for writing the story is over, you have 5 minutes to go back and read your story over. This is the time to make any small changes or additions. To do this, cross out with one line and write in the space between the lines.

Appendix I: Teacher's Package

ON DEPARTMENT LETTERHEAD

Title of Research Project: Language and Academic Skills of Elementary School Children Adopted from China as Infants

Researcher and contact information:
Kathleen Urichuk, Speech Pathology and Audiology Student
Supervised by Dr. Karen Pollock
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Faculty of Rehabilitation Medicine
University of Alberta
2-70 Corbett Hall, University of Alberta
Edmonton, Alberta T6G 2G4
Canada
Phone (780) 989-8807
Fax: (780) 492-9333
Email: kurichuk@ualberta.ca

Dear Teacher:

(Insert parent's name) has decided to participate in a study of children who were adopted from China as an infant. Participants must be currently attending school where English is the predominant language. This includes all levels from kindergarten up to and including Grade 6.

Purpose of the Study: The purpose of this research is to compare the language and academic skills of children adopted from China as infants to norms and widely held expectations for their Grade level.

Procedure: Complete instructions are in the survey package.
You are being asked to take 15 to 20 minutes to provide information about this student. This includes:

-completing an Academic Competence Evaluation Scale
-choosing and photocopying one sample of the student's written work. For the writing sample, a journal page would be ideal.

Benefits/Risks of the Study:
There are no risks or discomfort to you greater than those involved in normal, day-to-day activities. There is no monetary compensation for participation. However, results will be made available to parents on request. The data will benefit parents and professionals working with internationally adopted children in the future.

Privacy and Confidentiality:
All information will be held confidential or private except when professional code of ethics or legislation (or the law) requires reporting. The information you provide will be kept for at least five years after the study is done. It will be kept in a secure area (i.e. locked file cabinet.) Your name or any other identifying information will not be attached to the information you gave. Your name will also never be used in any presentations or publications of the study results. The information gathered for this study may be looked at again in the future to help us answer other study questions. If so, the ethics board will first review the study to ensure the information is used ethically.

Freedom to Withdraw/right to Refuse:
You have the right to withdraw your participation at any time during the study. You also have the right to refuse to answer any question on the survey.

If you have any concerns or complaints:
If you have any concerns or complaints about this study, please contact:

Dr. Sharon Warren
Director, Rehabilitation Research Centre
Faculty of Rehabilitation Medicine
University of Alberta
3-48 Corbett Hall, University of Alberta
Edmonton, Alberta T6G 2G4
Canada
Phone (780) 492-7856
Fax: (780) 492-1626
Email: sharon.warren@ualberta.ca

IMPORTANT: Return of this survey by mail indicates that you have read and understood this information letter, and the need for a signed consent is waived.

Thank you. Your participation in this project is greatly appreciated.

Academic Competence Evaluation Scales (ACES)

By James C. DiPerna and Stephen N. Elliott

Published by The Psychological Corporation Limited, a Harcourt Assessment Company

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Teacher Survey

Language and Academic Skills of School Aged Children Adopted from China as Infants

K. Urichuk, University of Alberta

1. How long have you been teaching this student?

_____ Since Sept 2005 _____ since (specify)_____

2. I am: _____the classroom teacher _____ the special education teacher

3. Program: _____ normal classroom

_____ normal classroom with some adaptations. Please specify.

_____

_____

_____ normal classroom with individual education plan. Please describe.

_____

_____

4. Time spent with student each day (average):

_____ less than 2 hours _____ 2-3 hours _____ 4 or more hours

5. Additional comments:

_____

_____

_____

_____

IMPORTANT: Return of this survey indicates that you have read and understood the information letter and the need for a signed consent is waived.

Appendix J: Quick Scales for Grade 1 and Grade 4

Available online at http://www.bced.gov.bc.ca/perf_stands/writing.htm

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Appendix K: CCC-2 *t*-test results, Comparison between total group and norms

	N=73 Mean (SD)	*t(72)*	*p*
Vocabulary and structure aspects			
Speech	9.16 (3.34)	-2.14	.04
Syntax	10.51 (3.04)	1.42	.16
Semantics	10.18 (3.59)	.42	.67
Coherence	9.75(3.23)	-.65	.52
Pragmatic aspects			
Inappropriate initiation	9.70 (3.14)	-.82	.42
Stereotyped language	9.81 (2.83)	-.58	.57
Use of context	9.60 (3.50)	-.97	.34
Nonverbal communication	10.03 (4.77)	.05	.96
Behavioural aspects			
Social relations	9.51 (3.11)	-1.36	.18
Interests	9.05 (2.58)	-3.13	.003
General Communication Composite (GCC)	**78.15(18.82)**	**-.84**	**.40**

Note: Normative sample mean is 10.00 for each scale and 80.00 for the composite GCC.

Appendix L: CCC-2 *t*-test results, Comparison between grade level groups

	K to Gr 2 N=38 Mean (SD)	Gr 3 to Gr 6 N=35 Mean (SD)	*T(df)*	*p*
Vocabulary and structure aspects				
Speech	8.95 (3.65)	9.40 (3.01)	-.58(71)	.57
Syntax	10.76 (3.27)	10.23 (2.80)	.75(71)	.46
Semantics	10.68 (3.28)	9.63 (3.87)	1.26 (71)	.21
Coherence	10.08 (3.24)	9.40 (3.23)	.90(70)	.37
Pragmatic aspects				
Inappropriate initiation	9.61 (3.08)	9.80 (3.25)	-.26 (71)	.79
Stereotyped language	9.71 (2.75)	9.91 (2.96)	-.30(69)	.76
Use of context	9.95 (3.70)	9.23 (3.26)	.88(71)	.38
Nonverbal communication	10.13 (3.13)	9.91 (6.12)	.19(71)	.84
Behavioural aspects				
Social relations	10.08 (3.06)	8.89 (3.07)	1.66(70)	.10
Interests	9.55 (2.20)	8.51 (2.87)	1.74(71)	.09
General Communication Composite (GCC)	**79.66 (18.82)**	**76.51 (18.95)**	**.71(70)**	**.48**

Note: Normative sample mean is 10.00 for each scale and 80.00 for the composite GCC.

Appendix M: ACES *t*-test results, comparison between total group and norms

ACES standard scores (deciles)

	All Grade Levels			
	N**	**Mean (SD)**	***t(df)***	***p***
Academic skills				
Reading/Language Arts	49*	7.29 (2.15)	7.44 (48)	.00
Critical Thinking	50*	6.76 (2.54)	4.91(49)	.00
Total Score				
(including Mathematics)	**47***	**6.89 (2.29)**	**5.68 (46)**	**.00**
Academic Enablers				
Interpersonal skills	49*	7.33 (2.36)	6.91 (48)	.00
Engagement	49*	6.96 (2.74)	5.01 (48)	.00
Motivation	46*	7.78 (2.04)	9.24 (45)	.00
Study skills	45*	7.76 (2.07)	8.94 (44)	.00
Total Score	**N=42***	**7.98 (1.93)**	**9.99 (41)**	**.00**

* Mean (SD) for each scale is 5.00 (0.05)

** Fifty-two out of seventy three participants returned ACES forms. Of these, a few were incomplete due to instructions for K-2 to "Stop Here" which referred to a section and not the complete form as it was sometimes interpreted. As well, following scoring instructions for the test, subscale scores were omitted when there were more than two skills not observed in a section.

Appendix N: ACES *t*-test results, comparison between grade level groups

ACES standard scores (deciles)

	K to Gr 2	Gr 3 to Gr 6		
	[N] Mean (SD)	[N] Mean (SD)	*t(df)*	*p*
Academic skills				
Reading/Language Arts	[29] 7.24 (1.99)	[20] 7.35 (2.41)	-1.72 (47)	.86
Critical Thinking	[31] 6.65 (2.50)	[19] 6.95 (2.66)	-.41 (48)	.69
Total Score AS				
(including Mathematics)	**[29] 6.93 (2.34)**	**[18] 6.83 (2.26)**	**.14 (45)**	**.89**
Academic Enablers				
Interpersonal skills	[29] 7.00 (2.38)	[20] 7.80 (2.31)	-1.18 (42)	.25
Engagement	[29] 6.31 (3.05)	[20] 7.90 (1.92)	-2.06 (47)	.05
Motivation	[27] 7.33 (2.11)	[19] 8.42 1.81)	-1.82 (44)	.08
Study skills	[25] 7.44 (2.20)	[20] 8.15 (1.87)	-1.15 (43)	.26
Total Score AE	**[3] 7.65 (2.08)**	**[19] 8.37 (1.71)**	**-1.20 (40)**	**.24**

* Mean (SD) for each scale is 5.00 (0.05)

** Fifty-two out of seventy three participants returned ACES forms. Of these, a few were incomplete due to instructions for K-2 to "Stop Here" which referred to a section and not the complete form as it was sometimes interpreted. As well, following scoring instructions for the test, subscale scores were omitted when there were more than two skills not observed in a section.

Appendix 0: Individual CCC-2 scores with GCC <55 or 3 or more subscale scores below the 10th percentile scores warranting further investigation

	Typically developing sample*	SLI*	Individual CCC-2 scaled scores				
	N=20	**N=14**	***#18***	***#20***	***#31***	***#58***	***#38***
	Mean (SD)	Mean (SD)					
Vocabulary and structure aspects							
Speech	10.75 (2.40)	2.44 (2.61)	3	8	1	7	0
Syntax	11.20 (1.24)	2.75 (3.19)	12	5	3	5	0
Semantics	11.50 (2.84)	2.31 (2.18)	7	7	5	1	3
Coherence	11.65(2.35)	2.56(1.50)	6	7	8	5	7
Pragmatic aspects							
Inappropriate initiation	9.85 (3.03)	5.38 (2.06)	6	6	5	9	14
Stereotyped language	10.90 (2.63)	3.69 (1.35)	7	8	2	6	14
Use of context	10.85 (2.39)	2.06 (1.73)	6	6	3	4	7
Nonverbal communication	11.70 (2.18)	5.00(2.07)	7	6	6	4	13
Behavioural aspects							
Social relations	11.20 (2.04)	5.31 (3.79)	7	12	4	3	7
Interests	10.50 (3.32)	5.69 (1.78)	9	7	4	8	10
General Communication Composite (GCC)	**78.15(18.82**		**54**	**53**	**33**	**41**	**58**
Social Interaction Deviance Scales (SIDC)			**1**	**4**	**2**	**6**	**34**

*Taken from Validation data gathered from three clinical samples and control group. Presented in Bishop, 2003, p. 36

Appendix P: Individual CCC-2 scores GCC <55 and SIDC >9 characteristic of specific language Impairment (SLI)

	Typically developing sample*	SLI*	Individual CCC-2 scaled scores		
	N=20	**N=14**	***#19***	***#63***	***#64***
	Mean (SD)	Mean (SD)			
Vocabulary and structure aspects					
Speech	10.75 (2.40)	2.44 (2.61)	3	7	7
Syntax	11.20 (1.24)	2.75 (3.19)	8	5	4
Semantics	11.50 (2.84)	2.31 (2.18)	3	6	0
Coherence	11.65(2.35)	2.56(1.50)	3	6	3
Pragmatic aspects					
Inappropriate initiation	9.85 (3.03)	5.38 (2.06)	9	8	5
Stereotyped language	10.90 (2.63)	3.69 (1.35)	5	8	4
Use of context	10.85 (2.39)	2.06 (1.73)	8	6	3
Nonverbal communication	11.70 (2.18)	5.00(2.07)	6	7	5
Behavioural aspects					
Social relations	11.20 (2.04)	5.31 (3.79)	9	10	6
Interests	10.50 (3.32)	5.69 (1.78)	12	9	8
General Communication Composite (GCC)	**78.15(18.82)**		**45**	**53**	**31**
Social Interaction Deviance Scales (SIDC)			**19**	**10**	**10**

*Taken from Validation data gathered from three clinical samples and control group. Presented in Bishop, 2003, p. 36

Appendix Q: Individual CCC-2 scores with GCC <55 and SIDC < 0 suggestive of an autistic spectrum disorder.

	Typically developing sample*	High functioning Autism*	Individual CCC-2 scaled scores			
	N=20	**N=14**	***#35***	***#47***	***#48***	***#65***
	Mean (SD)	Mean (SD)				
Vocabulary and structure aspects						
Speech	10.75 (2.40)	5.21 (4.00)	12	4	4	12
Syntax	11.20 (1.24)	3.79 (3.24)	9	1	6	5
Semantics	11.50 (2.84)	2.79 (2.12)	7	5	6	5
Coherence	11.65(2.35)	2.21(2.19)	4	4	5	6
Pragmatic aspects						
Inappropriate initiation	9.85 (3.03)	3.57 (2.14)	5	4	5	6
Stereotyped language	10.90 (2.63)	2.36 (2.31)	5	3	6	7
Use of context	10.85 (2.39)	0.64 (1.01)	4	4	5	5
Nonverbal communication	11.70 (2.18)	2.57(1.45)	4	2	4	7
Behavioural aspects						
Social relations	11.20 (2.04)	1.14 (1.51)	6	2	5	7
Interests	10.50 (3.32)	3.36 (1.45)	6	5	5	7
General Communication Composite (GCC)	**78.15(18.82)**		**50**	**27**	**41**	**53**
Social Interaction Deviance Scales (SIDC)			**-11**	**-1**	**-2**	**-1**

*Taken from Validation data gathered from three clinical samples and control group. Presented in Bishop, 2003, p. 36

Appendix R: Individual CCC-2 scores GCC >55 and SIDC < -15 rare in the normative sample but frequently seen in Asperger's syndrome

	Typically developing sample*	Asperger's syndrome*	Individual CCC-2 scaled scores				
	N=20	N=	#9	#26	#41	#46	#62
	Mean (SD)	Mean (SD)					
Vocabulary and structure aspects							
Speech	10.75 (2.40)	5.82 (3.06)	14	9	11	7	4
Syntax	11.20 (1.24)	6.27 (3.82)	13	12	11	12	12
Semantics	11.50 (2.84)	4.64 (3.53)	13	14	10	14	13
Coherence	11.65 (2.35)	3.27(3.00)	12	13	12	13	13
Pragmatic aspects							
Inappropriate initiation	9.85 (3.03)	3.27 (2.33)	8	6	9	12	6
Stereotyped language	10.90 (2.63)	3.36 (3.29)	8	8	12	8	10
Use of context	10.85 (2.39)	1.09 (1.76)	17	8	6	8	13
Nonverbal communication	11.70 (2.18)	2.18(2.99)	9	10	7	6	4
Behavioural aspects							
Social relations	11.20 (2.04)	1.73 (2.65)	10	5	7	6	3
Interests	10.50 (3.32)	2.36 (1.89)	9	9	5	5	5
General Communication Composite (GCC)	**78.15(18.82)**		**94**	**80**	**78**	**80**	**75**
Social Interaction Deviance Scales (SIDC)				**-18**	**-16**	**-17**	**-24**

*Taken from Validation data gathered from three clinical samples and control group. Presented in Bishop, 2003, p. 36